

FINE FINGER DEXTERITY WORK TASK UNIT

**AN ELECTROMECHANICAL VOCATIONAL
ASSESSMENT MANUAL**



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Fine Finger Dexterity Work Task Unit

Electromechanical Vocational Assessment Manuals



NATIONAL INDUSTRIES
FOR THE BLIND



FINE FINGER DEXTERITY WORK TASK UNIT

an Electromechanical Vocational Assessment Manual

Rehabilitation Research and Training Center
on Blindness and Low Vision
at Mississippi State University

National Industries for the Blind

February, 1983

Development of this document was supported by the Rehabilitation Research and Training Center Grant G008103981 from the National Institute for Handicapped Research, Department of Education, Washington, D.C. Opinions expressed in this document are not necessarily those of the granting agency.

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ACKNOWLEDGEMENT

The preparation of these manuals was dependent upon extensive development and experimental work sponsored by the National Industries for the Blind. The Rehabilitation Research and Training Center recognizes that without their support and the work done at Royal Maid Association for the Blind, the study that produced these manuals could not have been conducted.

In addition, many individuals contributed to the reliability and validity study from which these manuals were developed. Data were collected in Mississippi at Mississippi Industries for the Blind, Addie McBryde Rehabilitation Center, Royal Maid Association for the Blind (Hazelhurst and Tupelo), and the Regional Rehabilitation Center. Data were also collected at Louisiana Association for the Blind in Shreveport. The Rehabilitation Research and Training Center is grateful to the subjects and evaluators who contributed their time and energy.

It is hoped that these manuals and the work samples that they accompany will help to increase the employability of blind and visually impaired persons in general and multihandicapped blind persons in particular. The work of many professionals and multihandicapped blind persons has contributed to this effort, and we thank them all.



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I. INTRODUCTION

A. Title - FINE FINGER DEXTERITY WORK TASK UNIT

B. Description - The FINE FINGER DEXTERITY WORK TASK UNIT is designed to provide a flexible system of evaluating a variety of work abilities, including kinesthetic memory, bi-manual coordination, finger dexterity, and frustration tolerance. The task also provides an objective method of comparing a blind or visually impaired person's performance in these work abilities against the performance expected from an average sighted worker. This work task can also be used to provide work adjustment training.

When the work task is being used for an evaluation, the recommended procedures should be followed as closely as possible in order to accurately compare the visually impaired person's performance with the sighted standard. In a work adjustment situation, the procedures may need to be modified in order to accommodate the learning styles and special needs of persons with severe visual impairments or multiple handicaps.

The FINE FINGER DEXTERITY WORK TASK UNIT was developed to be used with the Work Pace Reinforcer. The reinforcer can be used with visually impaired persons as well as other disabled and nondisabled populations. This work task can be administered to individuals who have varying degrees of work experience.

C. Work Abilities Assessed - The FINE FINGER DEXTERITY WORK TASK UNIT is designed to assess the following work abilities:*

1. Kinesthetic Memory - the ability to appreciate and retain proportion, distance, and contour by touch.
2. Bi-Manual Coordination - the ability to move both hands so as to maintain any desired relationship between them.
3. Finger Dexterity - the ability to move a finger or fingers purposefully.
4. Frustration Tolerance - the degree to which the individual can cope with his anxieties and channel his energies into productive work areas.

*Richterman, H. Innovative evaluation procedures as developed at the Royal Maid Association for the Blind, a demonstration workshop and vocational rehabilitation services program of National Industries for the Blind. New York: National Industries for the Blind, 1982.
Additional work has been done in this area by George Aarons and William Sparkman at Royal Maid Association for the Blind, Inc.



D. Reliability and Validity - The reliability and validity of this work task unit are currently being tested in a National Industries for the Blind and Mississippi State University Rehabilitation Research and Training Center cooperative project.

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II. INSTRUCTIONS TO THE EVALUATOR

A. Prerequisites - No tests or other work samples are required prior to the administration of this work task. However, the evaluator should be aware of any upper extremity impairments which would interfere with the range of motions required in this work task. It is also important to be aware of any mental impairments that might affect the individual's ability to understand certain tasks.

B. Work Task Conditions - The work task should be set up indoors. A quiet area with few distractions will facilitate using the work task for work adjustment training. The subject may sit or stand during administration. Whether the subject chooses to sit or stand should be recorded. No special clothing or safety equipment is required.

It is important the the evaluator follow the instructions carefully. The instructions must be read each time the work task is conducted to ensure uniform administration. All the instructions should be presented in a casual, relaxed manner. If the subject appears confused, elaborations or additional explanations should be provided. Verbal explanations will not be enough, and the evaluator will need to guide the subject's hands on top of the evaluator's hands while the equipment and process to be followed are being explained. Any questions should be answered during and after the orientation.

Following the evaluator's demonstration, the subject practices until the entire task is completed three successive times. Then the timer is started, and the subject practices the task for 10 minutes. During this practice trial the evaluator should determine if the subject understands how the task is performed. The evaluator should watch closely for deviations from the standard procedures and make whatever corrections are necessary. If the subject does not understand the process, it is the responsibility of the evaluator to take steps to ensure that the subject does understand before initiating the evaluation procedure.

The Methods-Time Measurement procedure was used to develop the average sighted standard for this work task. This is a procedure which breaks down a manual operation or method into basic motions required to perform it. Each motion is assigned a time standard based upon the nature of the motion and the conditions under which it is made.

To develop the standard for this work unit five sighted subjects worked on the task for 50 minutes. The highest and lowest scores of the five were disregarded. The remaining three scores were averaged. The result was 176 manipulations per 50 minute period. Thus the interval for each manipulation is computed at 17 seconds.



C. Administration Equipment - The following equipment is required prior to administration:

1. One Work Pace Reinforcer
2. One Fine Finger Dexterity Work Task Unit
3. Six plastic holding boxes
4. 200 inserts (4" long, 2½" wide, and 7/8" thick with plastic cover)
5. Pins (800 double-headed 8 penny forming nails)
6. 400 T-plates (3½" long, 3/4" wide, and 1/8" thick)
7. One work stool with adjustable height
8. One copy of this manual

D. Set-up and Breakdown - Prior to administration, the evaluator should check the placement of all boxes, pins, inserts, and T-plates. Before beginning the task, the total and error indicators must be cleared to zero and the Work Pace Reinforcer set on 17 seconds.

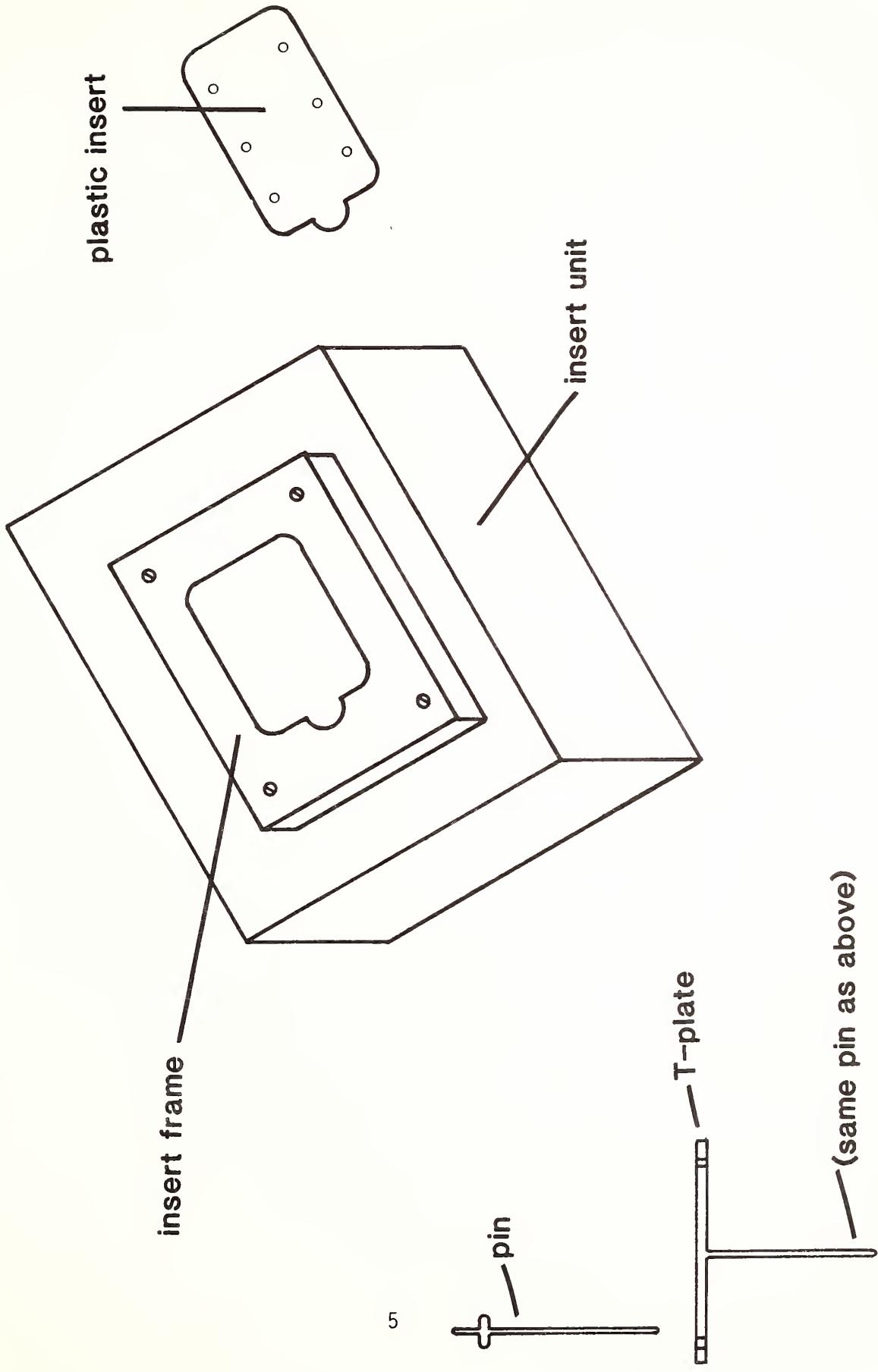
Disassembly should not take place until the subject has completed a ten minute practice period and a fifty minute trial period. There are two ways that the unit can be disassembled:

1. Upon completion of the fifty minute trial the subject can reverse the process and take the completed assemblies apart, replacing them in the proper boxes.
2. The evaluator can reverse the process and replace the assembly parts in the boxes.

It is recommended that in an evaluation setting the evaluator disassemble the unit.

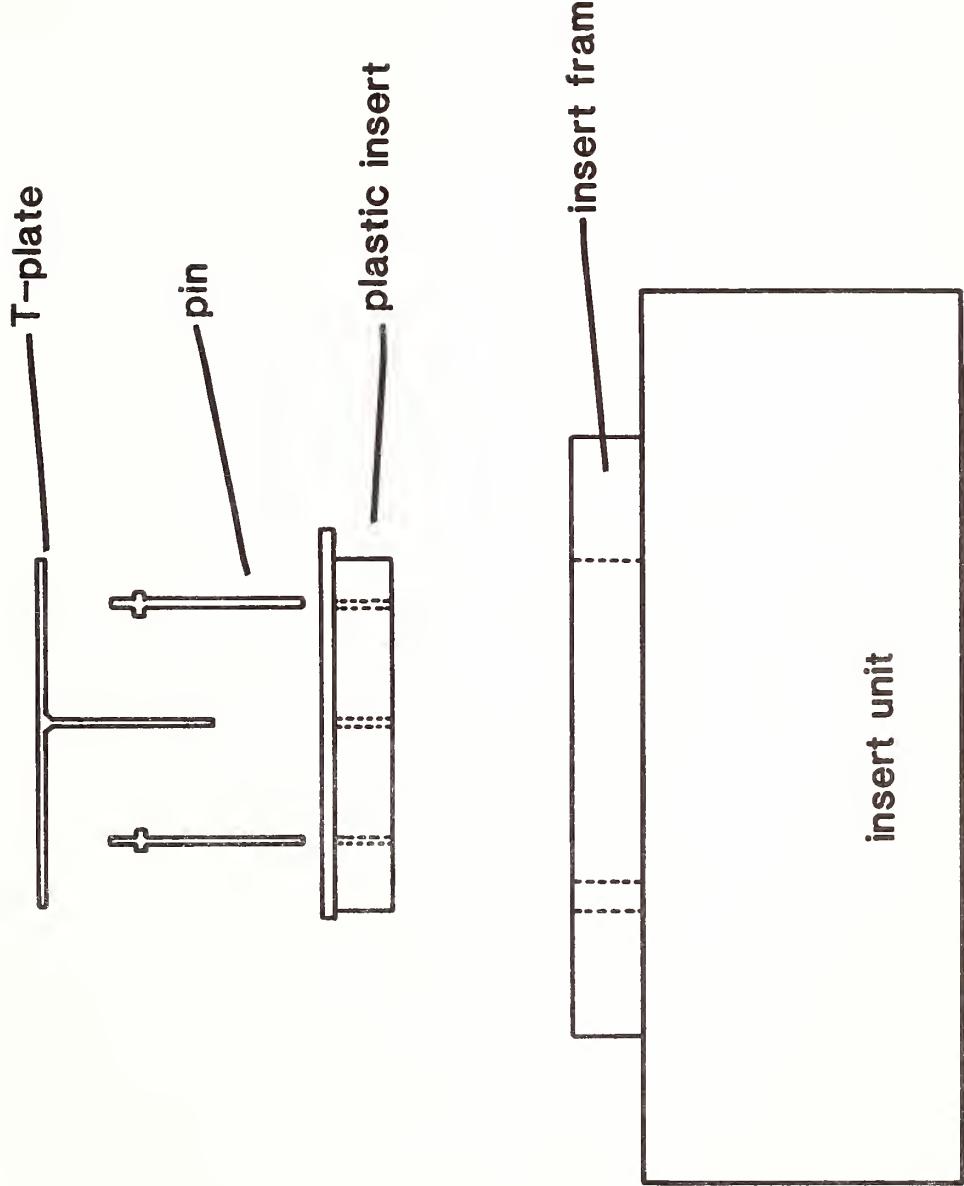


FINE FINGER DEXTERITY WORK TASK UNIT





FINE FINGER DEXTERITY WORK TASK UNIT





III. ADMINISTRATION

A. Client Orientation

Note to Evaluator: Present this orientation to each subject before administering the FINE FINGER DEXTERITY WORK TASK. This material does not have to be read verbatim, but all information should be covered. Present the material informally and pause to answer questions as asked. The purpose of this orientation is to inform the subject about:

1. jobs which are related to this work task, and
2. specific traits or characteristics on which he is being evaluated.

SAY:

IN A FEW MINUTES YOU WILL DO A FINE FINGER DEXTERITY WORK TASK. THIS WILL HELP US FIND OUT A FEW THINGS ABOUT YOU. ONE OF THE THINGS IT WILL TELL US IS HOW WELL YOU PUT PARTS TOGETHER. IT WILL ALSO TELL US IF YOU LIKE THIS KIND OF WORK. LET ME TELL YOU A FEW THINGS ABOUT THIS KIND OF WORK. MANY OF THE THINGS WE USE ARE PUT TOGETHER IN FACTORIES BY PEOPLE CALLED "ASSEMBLERS." THESE PEOPLE JOIN SMALL OR LARGE PARTS TO MAKE THINGS SUCH AS LAMPS, TOASTERS, DOLLS, AND TV SETS. IF YOU WORKED IN ONE OF THESE JOBS, YOU WOULD WORK IN A FACTORY WITH OTHER PEOPLE DOING JOBS LIKE YOURS. YOU HAVE TO BE GOOD WITH YOUR HANDS AND BE ABLE TO DO THE SAME THING OVER AND OVER AGAIN. YOU ALSO NEED TO LIKE TO WORK NEAR OTHER PEOPLE AND FOLLOW DIRECTIONS WELL. SOMETIMES PEOPLE WHO DO WELL IN THESE JOBS ARE PROMOTED TO BETTER JOBS. SOME MAY BECOME FOREMEN OR INSPECTORS. OTHERS MAY LEARN TO WORK ON MACHINES WHICH TAKE A LONG TIME TO LEARN TO RUN. THIS WORK TASK WILL TELL US OTHER THINGS ABOUT



YOU. IT WILL HELP US FIND OUT HOW WELL YOU CAN MOVE YOUR HANDS AND FINGERS. THIS WORK TASK WILL ALSO TELL US HOW LONG YOU CAN DO THE SAME THING WITHOUT GETTING MAD AT THE JOB, BORED, OR TIRED. DO YOU HAVE ANY QUESTIONS?

If the subject has no questions, begin to read the instructions and demonstrate the work task unit.

SAY:

THIS IS THE FINE FINGER DEXTERITY WORK TASK. IT WILL TELL US HOW WELL YOU USE BOTH HANDS AT THE SAME TIME. IT ALSO TELLS US HOW WELL YOU USE YOUR FINGERS.

Evaluator's Note: Move the subject's hands over the wooden box.

SAY:

IN FRONT OF YOU IS A BOX WITH A HOLE CUT OUT OF THE MIDDLE. ON BOTH SIDES OF THE BOX ARE PLASTIC BINS. EACH BIN HOLDS PART OF THE WORK TASK. THIS BIN HOLDS "PLASTIC INSERTS." THIS ONE HOLDS "PINS." THIS ONE HOLD "T-PLATES." THE LAST BIN IS EMPTY. ("Show" Subject each box and what it contains.)

Evaluator's Note: Orient subject to the bins containing plastic inserts, pins, T-plates, and holding box for completed assembly.

SAY:

FIRST, TAKE A "PLASTIC INSERT" OUT OF THE BIN. PUT IT IN THE HOLE ON TOP OF THE WOODEN BOX. TAKE TWO PINS FROM THE NEXT BIN. THE PINS GO IN THE HOLES IN THE PLASTIC INSERT.



PUT THESE PINS IN THE TWO HOLES NEAR THE EDGE OF THE INSERT.
TAKE TWO MORE PINS AND PUT THEM IN THE OTHER HOLES NEAR
THE EDGE OF THE INSERT.
TAKE TWO T-PLATES AND PLACE THEM IN THE TWO MIDDLE HOLES.
MAKE SURE THE TOP BAR OF THE T-PLATE COVERS THE PINS YOU
ALREADY PUT IN THE INSERT. WHEN ALL THE PARTS ARE IN PLACE,
PUSH IT DOWN THEN TAKE THE COMPLETED ASSEMBLY OUT AND PUT
IT IN THE EMPTY BOX.

Evaluator's Note: Let subject practice this routine two or three times, and if necessary, adjust his seat height if he is seated.

SAY:

IF BUZZER SOUNDS BEFORE YOU FINISH, KEEP WORKING. THE BUZZER
WILL STOP WHEN YOU HAVE FINISHED. KEEP WORKING UNTIL THE
TIME IS UP. ARE THERE ANY QUESTIONS?

Evaluator's Note: Activate timer and buzzer; let subject practice two or three times.

B. Practice Session

SAY:

YOU ARE GOING TO PRACTICE FOR TEN MINUTES. THE TIMER WILL
BE ON, SO WORK AS FAST AS YOU CAN. YOU WILL HAVE 17 SECONDS
TO PUT TOGETHER ONE UNIT. IF YOU TAKE LONGER THAN 17 SECONDS
YOU WILL HEAR THE BUZZER SOUND. THE BUZZER WILL SOUND UNTIL
YOU COMPLETE A UNIT. DO YOU HAVE ANY QUESTIONS?



Evaluator's Note: Answer any questions and begin the trial period. Remember to clear the total and error indicators and set the work pace timer.

SAY:

READY, START.

C. Performance Session

Evaluator's Note: Make sure timer is set at 17 seconds and the total response counter and the error counter are cleared to zero.

SAY:

ARE YOU READY TO START? YOU WILL WORK FOR 50 MINUTES. TRY
TO WORK AS FAST AS YOU CAN. READY? START.

START TIMING.

Check frequently for signs of frustration, fatigue, and accuracy of work task. Be sure to record your observations.

IV. SCORING

A. Criteria. The individual's score is obtained by determining how closely their work rate approaches the sighted standard. This score, or percent of the sighted standard, is computed by subtracting the number of error responses from total responses. The result is the number of correct responses. To obtain the percent of the sighted standard, the number of correct responses must be divided by the average number of manipulations completed by the sighted subjects (see Section II: Instructions to the Evaluator, part B: Work Task Conditions).

Other observed information must also be recorded. This information should include reaction to the error indicator and the subject's preference for left or right hand and for sitting or standing. Also record any signs of fatigue, frustration, or anxiety, as well as any general observations about the individual's attitude toward the task.

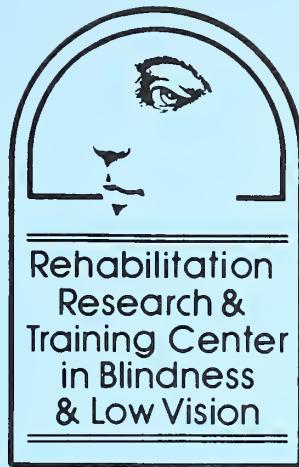
V. CONSTRUCTION

A. Description

The FINE FINGER DEXTERITY WORK TASK UNIT is used in conjunction with the Work Pace Reinforcer and consists of an insert unit, insert frame, plastic inserts, pins, and T-plates along with appropriate holding boxes. The insert unit utilizes microswitches which are depressed by the pins and T-plate pins to make a complete circuit. Should any of the above listed parts be placed incorrectly in the insert unit, an error will register on the error indication counter of the Work Pace Reinforcer; at the same time a buzzer will sound, alerting the client that an error has been made, either because of non-completion of the task in the allotted time frame or because one or more of the parts has been placed incorrectly. When the client correctly completes the work task and removes the completed assembly from the insert unit, the Work Pace Reinforcer will automatically reset to the allotted time.

B. Materials List

<u>QUANTITY</u>	<u>MATERIAL</u>
1	1" x 4" x 4' perimeter of the frame
4	2" x 4" x 6" mounting blocks
1	$\frac{1}{4}$ " x 10" x 12" plywood top
3'	Heavy duty electrical cord with ground
1	3-prong plug
176	4" x $2\frac{1}{2}$ " x 1" plastic inserts
704	#8 concrete forming nails (top head removed)
352	T-plates
6	Long paddle microswitches with mounting screws
8	#6 finishing nails
8	1 3/4" wood screws
16	1 $\frac{1}{2}$ " machine screws for mounting
2	12" x 14" x 10" plastic bins for T-plates
2	7" x 4" x 3" plastic bins for pins
1	24" x 12" x 12" plastic bin for inserts
1	24" x 24" x 12" plastic bin for completed assemblies



Foot Operated Hinged Box Work Task Unit

Electromechanical Vocational Assessment Manuals



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D. Reliability and Validity - The reliability and validity of this work task unit are currently being tested in a National Industries for the Blind and Mississippi State University Rehabilitation Research and Training Center cooperative project.



II. INSTRUCTIONS TO THE EVALUATOR

A. Prerequisites - No tests or other work samples are required prior to the administration of this work task. However, the evaluator should be aware of any extremity impairments which would interfere with the range of motions required in this work task. It is also important to be aware of any mental impairments that might affect the individual's ability to understand certain tasks.

B. Work Task Conditions - The work task should be set up indoors. A quiet area with few distractions will facilitate using the work task for work adjustment training. The subject may sit or stand during administration of the work task. Sitting is recommended because of the task set up. Whether the subject chooses to sit or stand should be recorded. No special clothing or safety equipment is required.

It is important that the evaluator follow the instructions carefully. The instructions must be read each time the work task is conducted to ensure uniform administration. All the instructions should be presented in a casual, relaxed manner. If the subject appears confused, elaborations or additional explanations should be provided. Verbal explanations will not be enough, and the evaluator will need to guide the subject's hands through the task. It is sometimes helpful to place the subject's hands on top of the evaluator's hands while the equipment and process to be followed are being explained. Any questions should be answered during and after the orientation.

Following the evaluator's demonstration, the subject practices until the entire task is completed three successive times. Then the timer is started, and the subject practices the task for 10 minutes. During the practice trial the evaluator should determine if the subject understands how the task is performed. The evaluator should watch closely for deviations from the standard procedures and make whatever corrections are necessary. If the subject does not understand the process, it is the responsibility of the evaluator to take steps to ensure that the subject does understand before initiating the evaluation procedure.

The Methods-Time Measurement Procedure was used to develop the average sighted standard for this work task. This is a procedure which breaks down a manual operation or method into the basic motions required to perform it. Each motion is assigned a time standard based upon the nature of the motion and the conditions under which it is made.

To develop the standard for this work task unit, five sighted subjects worked on the task for 50 minutes. The highest and the lowest scores of the five were disregarded. The remaining three scores were averaged. The result was 616 manipulations per 50 minute period. Thus the interval for each manipulation is computed at 5 seconds.



C. Administration Equipment - The following equipment is required prior to administration:

1. One Work Pace Reinforcer
2. One Foot Operated Hinged Box Work Task Unit
3. Two small plastic boxes
4. 1232 3/4" 8/32 machine screws
5. 1232 wing nuts to fit the 8/32 machine screws
6. One work stool with adjustable height
7. One copy of this manual

D. Set-up and Breakdown - Prior to administration, the evaluator should check the placement of all boxes, nuts, and screws. Before beginning the task, the total and error indicators must be cleared to zero and the Work Pace Timer set on 5 seconds.

Disassembly should not take place until the subject has completed a ten minute practice period and a fifty minute trial period. There are two ways that the unit can be disassembled:

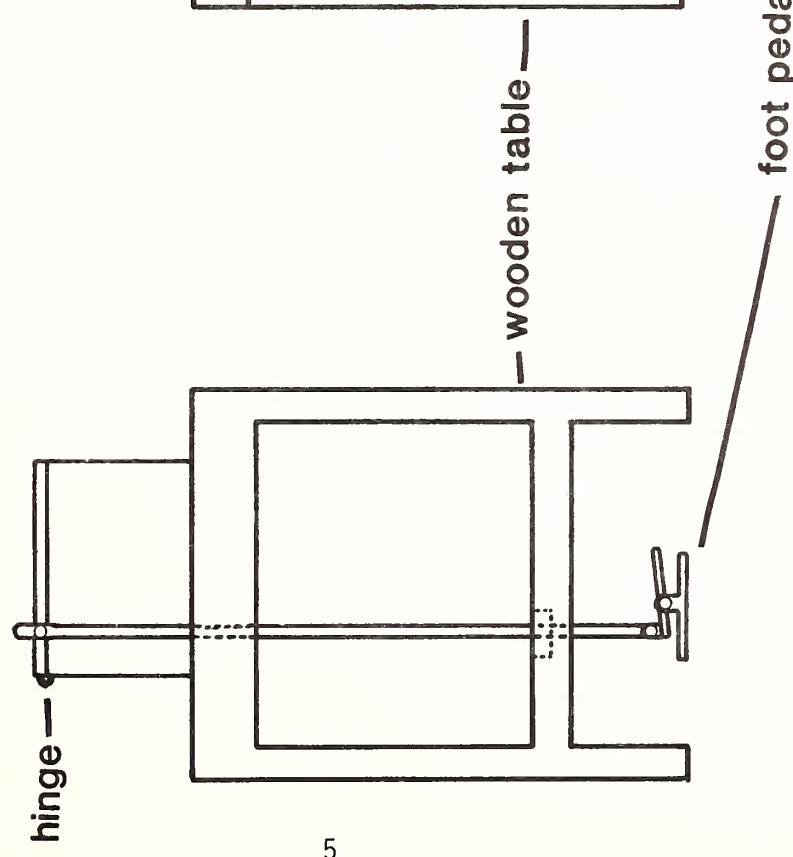
1. Upon completion of the fifty minute trial the subject can reverse the process by taking the screws and nuts apart and replacing them in the proper boxes.
2. The evaluator can take the screws and nuts apart and put them in the proper boxes.

It is recommended that in an evaluation setting the evaluator disassemble the unit.

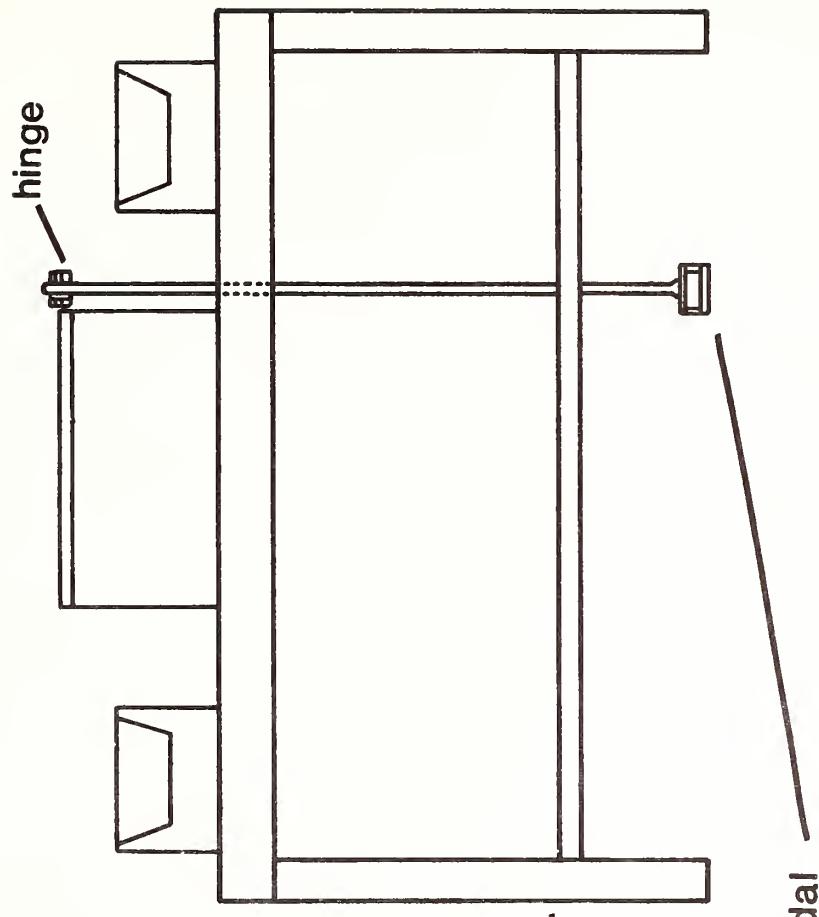


FOOT OPERATED HINGED BOX WORK TASK UNIT

SIDE VIEW



FRONT VIEW





FOOT OPERATED HINGED BOX WORK TASK UNIT

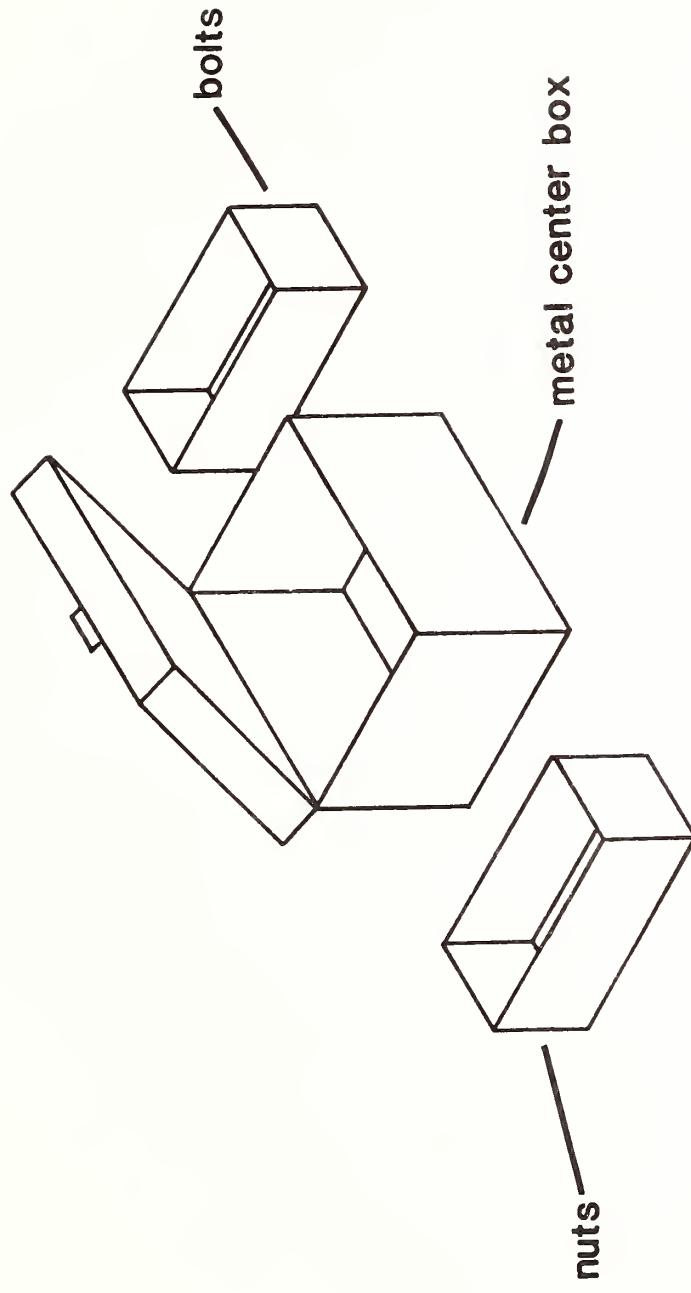


TABLE TOP BOX ARRANGEMENT



III. ADMINISTRATION

A. Client Orientation

Note to Evaluator: Present this orientation to each subject before administering the FOOT OPERATED HINGED BOX WORK TASK. This material does not have to be read verbatim, but all information should be covered. Present the material informally and pause to answer questions as asked. The purpose of this orientation is to inform the subject about:

1. jobs which are related to this work task, and
2. specific traits or characteristics on which he is being evaluated.

SAY:

IN A FEW MINUTES YOU WILL DO A FOOT OPERATED HINGED BOX WORK TASK. THIS WILL HELP US FIND OUT A FEW THINGS ABOUT YOU. ONE OF THE THINGS IT WILL TELL US IS HOW WELL YOU PUT PARTS TOGETHER. IT WILL ALSO TELL US IF YOU LIKE THIS KIND OF WORK. LET ME TELL YOU A FEW THINGS ABOUT THIS KIND OF WORK. MANY OF THE THINGS WE USE ARE PUT TOGETHER IN FACTORIES BY PEOPLE CALLED "ASSEMBLERS." THESE PEOPLE JOIN SMALL OR LARGE PARTS TO MAKE THINGS SUCH AS LAMPS, TOASTERS, DOLLS, AND TV SETS. IF YOU WORKED IN ONE OF THESE JOBS, YOU WOULD WORK IN A FACTORY WITH OTHER PEOPLE DOING JOBS LIKE YOURS. YOU HAVE TO BE GOOD WITH YOUR HANDS AND BE ABLE TO DO THE SAME THING OVER AND OVER AGAIN. YOU ALSO NEED TO LIKE TO WORK NEAR OTHER PEOPLE AND FOLLOW DIRECTIONS WELL. SOMETIMES PEOPLE WHO DO WELL IN THESE JOBS ARE PROMOTED TO BETTER JOBS. SOME MAY BECOME FOREMEN OR INSPECTORS. OTHERS MAY LEARN TO WORK ON MACHINES WHICH TAKE A LONG TIME TO LEARN TO RUN. THIS WORK TASK WILL TELL US OTHER THINGS



ABOUT YOU. IT WILL HELP US FIND OUT HOW WELL YOU CAN MOVE YOUR HANDS AND FINGERS AND FEET. THIS WORK TASK WILL ALSO TELL US HOW LONG YOU CAN DO THE SAME THING WITHOUT GETTING MAD AT THE JOB, BORED, OR TIRED. DO YOU HAVE ANY QUESTIONS?

If the subject has no questions, begin to read the instructions and demonstrate the work task unit.

Evaluator's Note: When the subject is facing the work task unit:

SAY:

THIS IS THE FOOT OPERATED HINGED BOX WORK TASK UNIT. IT IS USED TO TELL HOW WELL YOU USE YOUR HANDS AND FEET AT THE SAME TIME. IT ALSO TELLS HOW WELL YOU CAN WORK WITH YOUR FINGERS.

Evaluator's Note: Place the subject's hands on the work sample and guide them through the explanation procedure:

SAY:

IN FRONT OF YOU IS A TABLE. ON THE TABLE IS A METAL BOX. THE BOX CAN BE OPENED AND CLOSED BY THE FOOT PEDAL ON THE FLOOR. THE FOOT PEDAL IS NEAR YOUR RIGHT FOOT. ON YOUR LEFT IS A PLASTIC BOX FILLED WITH NUTS. ON YOUR RIGHT IS A PLASTIC BOX FILLED WITH SCREWS. (Show the subject the nuts and screws.)

Evaluator's Note: Holding boxes may be reversed for left-handed subjects. Orient subject to the location of holding boxes and foot pedal.



SAY:

THE WORK PACE MACHINE IS BEHIND THE METAL BOX. THIS MACHINE RECORDS THE NUMBER OF TIMES TO BOX IS OPENED. THIS MACHINE WILL TIME YOUR WORK. A BUZZER WILL SOUND IF YOU WORK TOO SLOWLY.

Evaluator's Note: Orient subject to location of Work Pace Reinforcer.

SAY:

FIRST, PICK UP ONE SCREW. AT THE SAME TIME PICK UP ONE NUT. BRING THEM TOGETHER IN FRONT OF YOU. PUT THE NUT ON THE SCREW. (Show subject how this is done.) TURN THE NUT ONCE ON THE SCREW. PRESS THE PEDAL WITH YOUR FOOT. PUT THE NUT AND SCREW INTO THE BOX.

Evaluator's Note: Let subject practice this routine two or three times.

SAY:

AFTER YOU PUT THE NUT AND SCREW IN THE BOX, TAKE YOUR FOOT ALL THE WAY OFF THE PEDAL. IF YOU KEEP YOUR FOOT ON THE PEDAL, YOU WILL GET A LOW SCORE. THE WORK PACE MACHINE COUNTS EACH NUT AND SCREW YOU PLACE IN THE BOX. A BUZZER WILL SOUND IF YOU TAKE TOO LONG TO PUT THE NUT ON THE SCREW AND DROP THEM IN THE BOX. THE BUZZER WILL CONTINUE UNTIL YOU PUT THE NUT AND SCREW INTO THE BOX.

Evaluator's Note: Active time and buzzer; let subject practice two or three times.



B. Practice Session

SAY:

YOU ARE GOING TO PRACTICE FOR TEN MINUTES. THE TIMER WILL BE ON, SO WORK AS FAST AS YOU CAN. YOU WILL HAVE 5 SECONDS TO PUT THE NUT AND SCREW TOGETHER AND DROP THEM INTO THE BOX. IF YOU TAKE LONGER THE BUZZER WILL SOUND UNTIL YOU PUT THE NUT AND SCREW ASSEMBLY INTO THE BOX. DO YOU HAVE ANY QUESTIONS?

Evaluator's Note: Answer any questions and begin the trial period. Remember to clear the total and error counters and set the work pace timer.

SAY:

READY, START.

C. Performance Session

Evaluator's Note: Make sure timer is set at 5 seconds and the total response and error counters are cleared to zero.

SAY:

ARE YOU READY TO START? YOU WILL WORK FOR 50 MINUTES.
TRY TO WORK AS FAST AS YOU CAN. READY? START.

START TIMING

Evaluator's Note: Check frequently for signs of frustration, fatigue, and accuracy of work task. Be sure to record your observations.



IV. SCORING

A. Criteria. The individual's score is obtained by determining how closely their work rate approaches the sighted standard. This score, or percent of the sighted standard, is computed by subtracting the number of error responses from total responses. The result is the number of correct responses. To obtain the percent of the sighted standard, the number of correct responses must be divided by the average number of manipulations completed by the sighted subjects (see Section II: Instructions to the Evaluator, part B: Work Task Conditions).

Other observed information must also be recorded. This information should include reaction to the error indicator and the subject's preference for left or right hand and for sitting or standing. Also record any signs of fatigue, frustration, or anxiety, as well as any general observations about the individual's attitude toward the task.



V. CONSTRUCTION

A. Description - The FOOT OPERATED HINGED BOX WORK TASK UNIT is composed of:

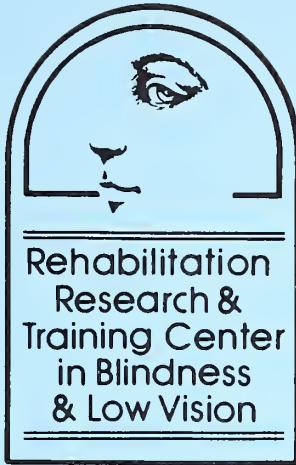
1. A table 42" wide, 18" deep, and 35" high with a bracket to accomodate a Work Pace Reinforcer.
2. A hinged lid box 12" wide, 10" deep, and 6" high equipped with a mercury switch mounted on the inside of the box which allows the electrical circuit to be completed when the lid is opened and broken when the lid is closed.
3. A manual foot operated mechanism used to raise the lid of the hinged box.
4. The Work Pace Reinforcer for timing the cycle of each operation, recording the number of attempts, and the elapsed time after errors.

B. Materials List

<u>QUANTITY</u>	<u>MATERIAL</u>
1	Radio Shack Magnetic Switch
1	160-5N Recessed Male Amphenol Connector
1	Metal Box with Hinged Lid Approximately 12" wide x 10" deep x 6" high
1	Table 42" wide x 18" deep x 35" high with stand to accommodate a Work Pace Reinforcer
2	Holding boxes 6" wide x 10" deep x 5" high







Foot Operated Hinged Box Work Task Unit

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In addition, many individuals contributed to the reliability and validity study from which these manuals were developed. Data were collected in Mississippi at Mississippi Industries for the Blind, Addie McBryde Rehabilitation Center, Royal Maid Association for the Blind (Hazelhurst and Tupelo), and the Regional Rehabilitation Center. Data were also collected at Louisiana Association for the Blind in Shreveport. The Rehabilitation Research and Training Center is grateful to the subjects and evaluators who contributed their time and energy.

It is hoped that these manuals and the work samples that they accompany will help to increase the employability of blind and visually impaired persons in general and multihandicapped blind persons in particular. The work of many professionals and multihandicapped blind persons has contributed to this effort, and we thank them all.



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I. INTRODUCTION

A. Title - FOOT OPERATED HINGED BOX WORK TASK UNIT

B. Description - The FOOT OPERATED HINGED BOX WORK TASK UNIT is designed to provide a flexible system of evaluating a variety of work abilities, including hand-foot coordination, bi-manual coordination, and finger dexterity. The task also provides an objective method of comparing a blind or visually impaired person's performance in these work abilities against the performance expected from an average sighted worker. This work task can also be used to provide work adjustment training.

When the work task is being used for an evaluation, the recommended procedures should be followed as closely as possible in order to accurately compare the visually impaired person's performance with the sighted standard. In a work adjustment situation, the procedures may need to be modified in order to accommodate the learning styles and special needs of persons with severe visual impairments or multiple handicaps.

The FOOT OPERATED HINGED BOX WORK TASK UNIT was developed to be used with the Work Pace Reinforcer. The reinforcer can be used with visually impaired persons as well as disabled and non-disabled populations. This work task can be administered to individuals who have varying degrees of work experience.

C. Work Abilities Assessed - The FOOT OPERATED HINGED BOX WORK TASK UNIT is designed to assess the following work abilities:*

1. Hand-foot Coordination - the ability to move the hands and feet in any combination so as to maintain any desired relationship between them.
2. Bi-manual Coordination - the ability to move both hands so as to maintain any desired relationship between them.
3. Finger Dexterity - the ability to move a finger or fingers purposefully.

*Richterman, H. Innovative evaluation procedures as developed at the Royal Maid Association for the Blind, a demonstration workshop and vocational rehabilitation services program of National Industries for the Blind. New York: National Industries for the Blind, 1982. Additional work has been done in this area by George Aarons and William Sparkman at Royal Maid Association for the Blind, Inc.



D. Reliability and Validity - The reliability and validity of this work task unit are currently being tested in a National Industries for the Blind and Mississippi State University Rehabilitation Research and Training Center cooperative project.



II. INSTRUCTIONS TO THE EVALUATOR

A. Prerequisites - No tests or other work samples are required prior to the administration of this work task. However, the evaluator should be aware of any extremity impairments which would interfere with the range of motions required in this work task. It is also important to be aware of any mental impairments that might affect the individual's ability to understand certain tasks.

B. Work Task Conditions - The work task should be set up indoors. A quiet area with few distractions will facilitate using the work task for work adjustment training. The subject may sit or stand during administration of the work task. Sitting is recommended because of the task set up. Whether the subject chooses to sit or stand should be recorded. No special clothing or safety equipment is required.

It is important that the evaluator follow the instructions carefully. The instructions must be read each time the work task is conducted to ensure uniform administration. All the instructions should be presented in a casual, relaxed manner. If the subject appears confused, elaborations or additional explanations should be provided. Verbal explanations will not be enough, and the evaluator will need to guide the subject's hands through the task. It is sometimes helpful to place the subject's hands on top of the evaluator's hands while the equipment and process to be followed are being explained. Any questions should be answered during and after the orientation.

Following the evaluator's demonstration, the subject practices until the entire task is completed three successive times. Then the timer is started, and the subject practices the task for 10 minutes. During the practice trial the evaluator should determine if the subject understands how the task is performed. The evaluator should watch closely for deviations from the standard procedures and make whatever corrections are necessary. If the subject does not understand the process, it is the responsibility of the evaluator to take steps to ensure that the subject does understand before initiating the evaluation procedure.

The Methods-Time Measurement Procedure was used to develop the average sighted standard for this work task. This is a procedure which breaks down a manual operation or method into the basic motions required to perform it. Each motion is assigned a time standard based upon the nature of the motion and the conditions under which it is made.

To develop the standard for this work task unit, five sighted subjects worked on the task for 50 minutes. The highest and the lowest scores of the five were disregarded. The remaining three scores were averaged. The result was 616 manipulations per 50 minute period. Thus the interval for each manipulation is computed at 5 seconds.



C. Administration Equipment - The following equipment is required prior to administration:

1. One Work Pace Reinforcer
2. One Foot Operated Hinged Box Work Task Unit
3. Two small plastic boxes
4. 1232 3/4" 8/32 machine screws
5. 1232 wing nuts to fit the 8/32 machine screws
6. One work stool with adjustable height
7. One copy of this manual

D. Set-up and Breakdown - Prior to administration, the evaluator should check the placement of all boxes, nuts, and screws. Before beginning the task, the total and error indicators must be cleared to zero and the Work Pace Timer set on 5 seconds.

Disassembly should not take place until the subject has completed a ten minute practice period and a fifty minute trial period. There are two ways that the unit can be disassembled:

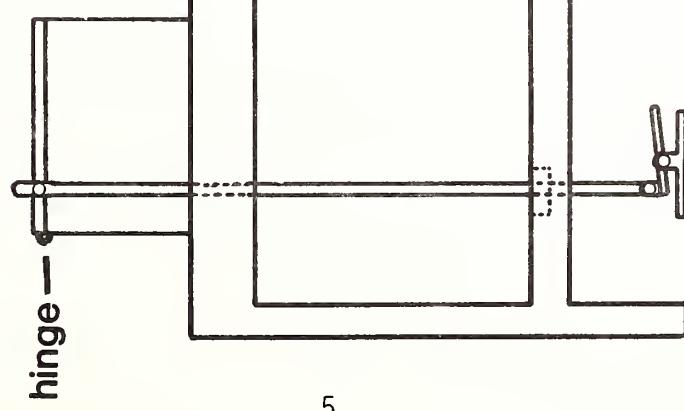
1. Upon completion of the fifty minute trial the subject can reverse the process by taking the screws and nuts apart and replacing them in the proper boxes.
2. The evaluator can take the screws and nuts apart and put them in the proper boxes.

It is recommended that in an evaluation setting the evaluator disassemble the unit.

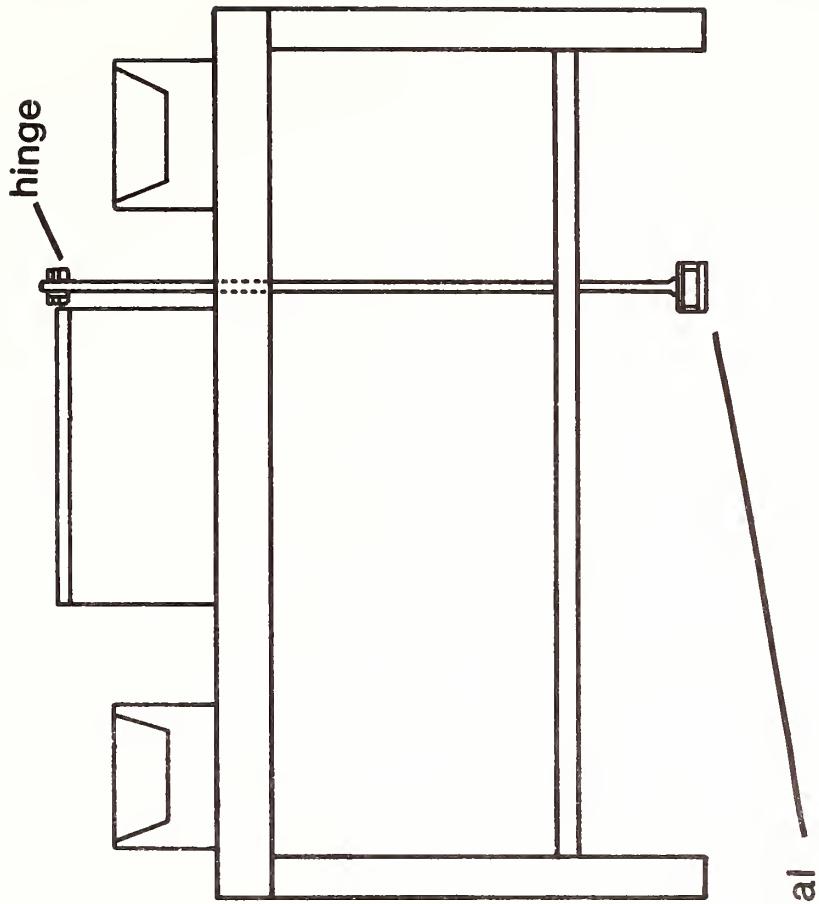


FOOT OPERATED HINGED BOX WORK TASK UNIT

SIDE VIEW



FRONT VIEW





FOOT OPERATED HINGED BOX WORK UNIT

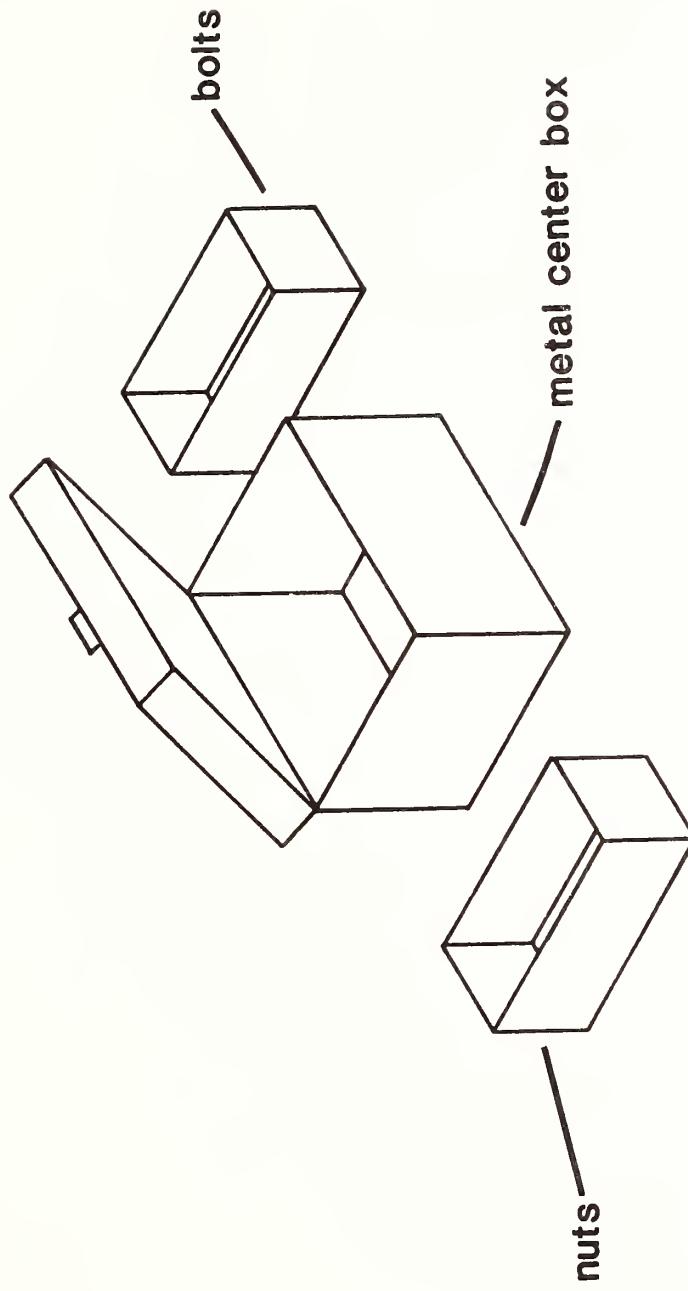


TABLE TOP BOX ARRANGEMENT



III. ADMINISTRATION

A. Client Orientation

Note to Evaluator: Present this orientation to each subject before administering the FOOT OPERATED HINGED BOX WORK TASK. This material does not have to be read verbatim, but all information should be covered. Present the material informally and pause to answer questions as asked. The purpose of this orientation is to inform the subject about:

1. jobs which are related to this work task, and
2. specific traits or characteristics on which he is being evaluated.

SAY:

IN A FEW MINUTES YOU WILL DO A FOOT OPERATED HINGED BOX WORK TASK. THIS WILL HELP US FIND OUT A FEW THINGS ABOUT YOU. ONE OF THE THINGS IT WILL TELL US IS HOW WELL YOU PUT PARTS TOGETHER. IT WILL ALSO TELL US IF YOU LIKE THIS KIND OF WORK. LET ME TELL YOU A FEW THINGS ABOUT THIS KIND OF WORK. MANY OF THE THINGS WE USE ARE PUT TOGETHER IN FACTORIES BY PEOPLE CALLED "ASSEMBLERS." THESE PEOPLE JOIN SMALL OR LARGE PARTS TO MAKE THINGS SUCH AS LAMPS, TOASTERS, DOLLS, AND TV SETS. IF YOU WORKED IN ONE OF THESE JOBS, YOU WOULD WORK IN A FACTORY WITH OTHER PEOPLE DOING JOBS LIKE YOURS. YOU HAVE TO BE GOOD WITH YOUR HANDS AND BE ABLE TO DO THE SAME THING OVER AND OVER AGAIN. YOU ALSO NEED TO LIKE TO WORK NEAR OTHER PEOPLE AND FOLLOW DIRECTIONS WELL. SOMETIMES PEOPLE WHO DO WELL IN THESE JOBS ARE PROMOTED TO BETTER JOBS. SOME MAY BECOME FOREMEN OR INSPECTORS. OTHERS MAY LEARN TO WORK ON MACHINES WHICH TAKE A LONG TIME TO LEARN TO RUN. THIS WORK TASK WILL TELL US OTHER THINGS



ABOUT YOU. IT WILL HELP US FIND OUT HOW WELL YOU CAN MOVE YOUR HANDS AND FINGERS AND FEET. THIS WORK TASK WILL ALSO TELL US HOW LONG YOU CAN DO THE SAME THING WITHOUT GETTING MAD AT THE JOB, BORED, OR TIRED. DO YOU HAVE ANY QUESTIONS?

If the subject has no questions, begin to read the instructions and demonstrate the work task unit.

Evaluator's Note: When the subject is facing the work task unit:

SAY:

THIS IS THE FOOT OPERATED HINGED BOX WORK TASK UNIT. IT IS USED TO TELL HOW WELL YOU USE YOUR HANDS AND FEET AT THE SAME TIME. IT ALSO TELLS HOW WELL YOU CAN WORK WITH YOUR FINGERS.

Evaluator's Note: Place the subject's hands on the work sample and guide them through the explanation procedure:

SAY:

IN FRONT OF YOU IS A TABLE. ON THE TABLE IS A METAL BOX. THE BOX CAN BE OPENED AND CLOSED BY THE FOOT PEDAL ON THE FLOOR. THE FOOT PEDAL IS NEAR YOUR RIGHT FOOT. ON YOUR LEFT IS A PLASTIC BOX FILLED WITH NUTS. ON YOUR RIGHT IS A PLASTIC BOX FILLED WITH SCREWS. (Show the subject the nuts and screws.)

Evaluator's Note: Holding boxes may be reversed for left-handed subjects. Orient subject to the location of holding boxes and foot pedal.



SAY:

THE WORK PACE MACHINE IS BEHIND THE METAL BOX. THIS MACHINE RECORDS THE NUMBER OF TIMES TO BOX IS OPENED. THIS MACHINE WILL TIME YOUR WORK. A BUZZER WILL SOUND IF YOU WORK TOO SLOWLY.

Evaluator's Note: Orient subject to location of Work Pace Reinforcer.

SAY:

FIRST, PICK UP ONE SCREW. AT THE SAME TIME PICK UP ONE NUT. BRING THEM TOGETHER IN FRONT OF YOU. PUT THE NUT ON THE SCREW. (Show subject how this is done.) TURN THE NUT ONCE ON THE SCREW. PRESS THE PEDAL WITH YOUR FOOT. PUT THE NUT AND SCREW INTO THE BOX.

Evaluator's Note: Let subject practice this routine two or three times.

SAY:

AFTER YOU PUT THE NUT AND SCREW IN THE BOX, TAKE YOUR FOOT ALL THE WAY OFF THE PEDAL. IF YOU KEEP YOUR FOOT ON THE PEDAL, YOU WILL GET A LOW SCORE. THE WORK PACE MACHINE COUNTS EACH NUT AND SCREW YOU PLACE IN THE BOX. A BUZZER WILL SOUND IF YOU TAKE TOO LONG TO PUT THE NUT ON THE SCREW AND DROP THEM IN THE BOX. THE BUZZER WILL CONTINUE UNTIL YOU PUT THE NUT AND SCREW INTO THE BOX.

Evaluator's Note: Active time and buzzer; let subject practice two or three times.



B. Practice Session

SAY:

YOU ARE GOING TO PRACTICE FOR TEN MINUTES. THE TIMER WILL BE ON, SO WORK AS FAST AS YOU CAN. YOU WILL HAVE 5 SECONDS TO PUT THE NUT AND SCREW TOGETHER AND DROP THEM INTO THE BOX. IF YOU TAKE LONGER THE BUZZER WILL SOUND UNTIL YOU PUT THE NUT AND SCREW ASSEMBLY INTO THE BOX. DO YOU HAVE ANY QUESTIONS?

Evaluator's Note: Answer any questions and begin the trial period. Remember to clear the total and error counters and set the work pace timer.

SAY:

READY, START.

C. Performance Session

Evaluator's Note: Make sure timer is set at 5 seconds and the total response and error counters are cleared to zero.

SAY:

ARE YOU READY TO START? YOU WILL WORK FOR 50 MINUTES.
TRY TO WORK AS FAST AS YOU CAN. READY? START.

START TIMING

Evaluator's Note: Check frequently for signs of frustration, fatigue, and accuracy of work task. Be sure to record your observations.



IV. SCORING

A. Criteria. The individual's score is obtained by determining how closely their work rate approaches the sighted standard. This score, or percent of the sighted standard, is computed by subtracting the number of error responses from total responses. The result is the number of correct responses. To obtain the percent of the sighted standard, the number of correct responses must be divided by the average number of manipulations completed by the sighted subjects (see Section II: Instructions to the Evaluator, part B: Work Task Conditions).

Other observed information must also be recorded. This information should include reaction to the error indicator and the subject's preference for left or right hand and for sitting or standing. Also record any signs of fatigue, frustration, or anxiety, as well as any general observations about the individual's attitude toward the task.



V. CONSTRUCTION

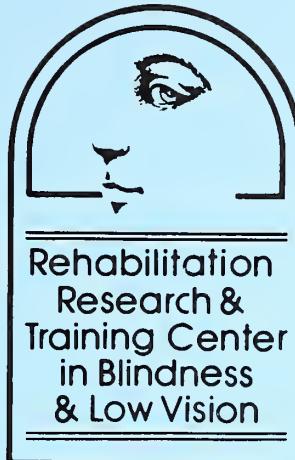
A. Description - The FOOT OPERATED HINGED BOX WORK TASK UNIT is composed of:

1. A table 42" wide, 18" deep, and 35" high with a bracket to accomodate a Work Pace Reinforcer.
2. A hinged lid box 12" wide, 10" deep, and 6" high equipped with a mercury switch mounted on the inside of the box which allows the electrical circuit to be completed when the lid is opened and broken when the lid is closed.
3. A manual foot operated mechanism used to raise the lid of the hinged box.
4. The Work Pace Reinforcer for timing the cycle of each operation, recording the number of attempts, and the elapsed time after errors.

B. Materials List

<u>QUANTITY</u>	<u>MATERIAL</u>
1	Radio Shack Magnetic Switch
1	160-5N Recessed Male Amphenol Connector
1	Metal Box with Hinged Lid Approximately 12" wide x 10" deep x 6" high
1	Table 42" wide x 18" deep x 35" high with stand to accommodate a Work Pace Reinforcer
2	Holding boxes 6" wide x 10" deep x 5" high





Index Card Work Task Unit

Electromechanical Vocational Assessment Manuals



NATIONAL INDUSTRIES
FOR THE BLIND

INDEX CARD WORK TASK UNIT

an Electromechanical Vocational Assessment Manual

Rehabilitation Research and Training Center
on Blindness and Low Vision
at Mississippi State University

National Industries for the Blind

February, 1983

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DIAGRAM



I. INTRODUCTION

A. Title - INDEX CARD WORK TASK UNIT

B. Description - THE INDEX CARD WORK TASK UNIT is designed to provide a flexible system of evaluating a variety of work abilities, including bi-manual coordination, finger dexterity, frustration tolerance, and memory for sequence of operations. The task also provides an objective method of comparing a blind or visually impaired person's performance in these work abilities against the performance expected from an average sighted worker. This work task can also be used to provide work adjustment training.

When the work task is being used for an evaluation, the recommended procedures should be followed as closely as possible in order to accurately compare the visually impaired person's performance with the sighted standard. In a work adjustment situation, the procedures may need to be modified in order to accomodate the learning styles and special needs of persons with severe visual impairments or multiple handicaps.

The INDEX CARD WORK TASK UNIT was developed to be used with the Work Pace Timer. The timer can be used with visually impaired persons as well as other disabled and nondisabled populations. The work task can be administered to individuals who have varying degrees of work experience.

C. Work Abilities Assessed - The INDEX CARD WORK TASK UNIT is designed to assess the following work abilities:*

1. Bi-manual Coordination - the ability to move both hands in order to maintain any desired relationship between them.
2. Finger Dexterity - the ability to move a finger or fingers purposefully.
3. Frustration Tolerance - the degree to which the individual can cope with his anxieties and channel his energies into productive work areas.
4. Memory for Sequence of Operations - the ability to follow routinely the appropriate sequence of steps in a complex operation.

*Richterman, H. Innovative evaluation procedures as developed at the Royal Maid Association for the Blind, a demonstration workshop and vocational rehabilitation services program of National Industries for the Blind. New York: National Industries for the Blind, 1982. Additional work has been done in this area by George Aarons and William Sparkman at Royal Maid Association for the Blind, Inc.



D. Reliability and Validity - The reliability and validity of this work task unit are currently being tested in a National Industries for the Blind and Mississippi State University Rehabilitation Research and Training Center cooperative project.



II. INSTRUCTION TO THE EVALUATOR

A. Prerequisites - No tests or other work samples are required prior to the administration of this work task. However, the evaluator should be aware of any upper extremity impairments which would interfere with the range of motions required in this work task. It is also important to be aware of any mental impairments that might affect the individual's ability to understand certain tasks.

B. Work Task Conditions - The work task should be set up indoors. A quiet area with few distractions will facilitate using the work task for work adjustment training. The subject should stand during administration of the work task. No special clothing or safety equipment is required.

It is important that the evaluator follow the instructions carefully. The instructions must be read each time the work task is conducted to ensure uniform administration. All the instructions should be presented in a casual, relaxed manner. If the subject appears confused, elaborations or additional explanations, should be provided. Verbal explanations will not be enough, and the evaluator will need to guide the subject's hands through the task. It is sometimes helpful to place the subject's hands on top of the evaluator's hands while the equipment and process to be followed are being explained. Any questions should be answered during and after the orientation.

Following the evaluator's demonstration, the subject practices until the entire task is completed three successive times. Then the timer is started, and the subject practices the task for 10 minutes. During this practice trial the evaluator must determine if the subject understands how the task is performed. The evaluator should watch closely for deviations from the standard procedures and make whatever corrections are necessary. If the subject does not understand the process, it is the responsibility of the evaluator to take steps to ensure that the subject does understand before initiating the evaluation procedure.

The Methods-Time Measurement Procedure was used to develop the average sighted standard for this work task. This is a procedure which breaks down a manual operation or method into the basic motions required to perform it. Each motion is assigned a time standard based upon the nature of the motion and the conditions under which it is made.

To develop the standard for this work task unit five sighted subjects worked on the task for 50 minutes. The highest and the lowest scores of the five were disregarded. The remaining three scores were averaged. The result was 750 manipulations per 50 minute period. Thus the interval for each manipulation is computed at 4 seconds.



C. Administration Equipment - The following equipment is required prior to administration.

1. One Work Pace Timer
2. One Index Card Work Task Unit
3. Two small plastic boxes
4. 1000 3"x 5"index cards
5. One copy of this manual

D. Set-up and Breakdown - Prior to administration, the evaluator should check the placement of both boxes and index cards. Before beginning the task, the total and error indicators must be cleared to zero and the Work Pace Timer set on 4 seconds.

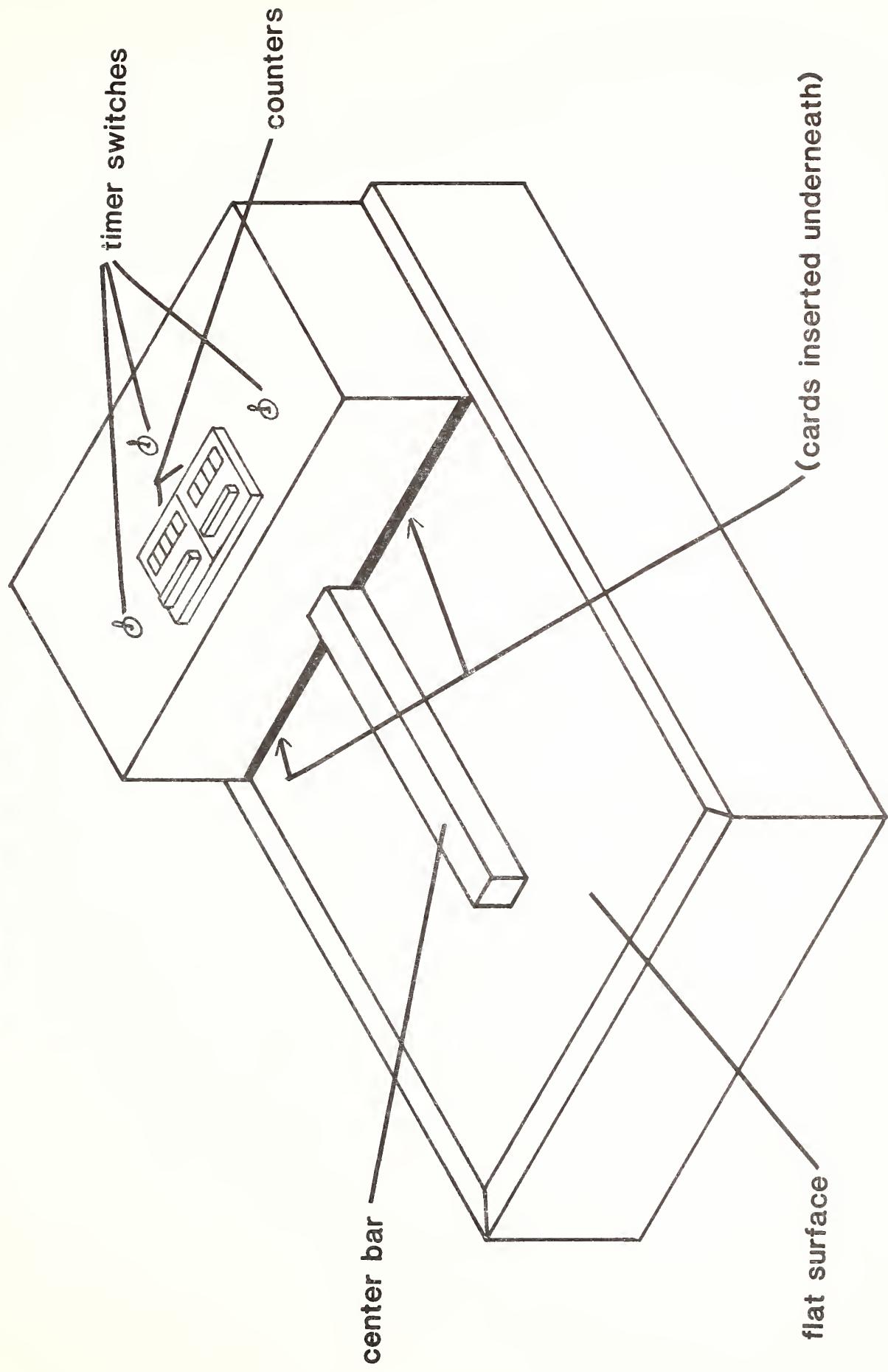
Disassembly should not take place until the subject has completed a 10 minute practice period and a fifty minute trial period. There are two ways that the unit can be disassembled:

1. Upon completion of the fifty minute trial the subject can replace the used index cards in the box to the left.
2. The evaluator can replace the index cards in the box to the left.

It is recommended that in an evaluation setting the evaluator disassemble the unit.



INDEX CARD WORK TASK UNIT





III. ADMINISTRATION

A. Client Orientation

Note to Evaluator: Present this orientation to each subject before administering the INDEX CARD WORK TASK. This material does not have to be read verbatim, but all information should be covered. Present the material informally and pause to answer questions as asked. The purpose of this orientation is to inform the subject about:

1. jobs which are related to this work task, and
2. specific traits or characteristics on which he is being evaluated.

SAY:

IN A FEW MINUTES YOU WILL DO AN INDEX CARD WORK TASK. THIS WILL HELP US FIND OUT A FEW THINGS ABOUT YOU. ONE OF THE THINGS IT WILL TELL US IS HOW WELL YOU PUT PARTS TOGETHER. IT WILL ALSO TELL US IF YOU LIKE THIS KIND OF WORK. LET ME TELL YOU A FEW THINGS ABOUT THIS KIND OF WORK. MANY OF THE THINGS WE USE ARE PUT TOGETHER IN FACTORIES BY PEOPLE CALLED "ASSEMBLERS." THESE PEOPLE JOIN SMALL OR LARGE PARTS TO MAKE THINGS SUCH AS LAMPS, TOASTERS, DOLLS, AND TV SETS. IF YOU WORKED IN ONE OF THESE JOBS, YOU WOULD WORK IN A FACTORY WITH OTHER PEOPLE DOING JOBS LIKE YOURS. YOU HAVE TO BE GOOD WITH YOUR HANDS AND BE ABLE TO DO THE SAME THING OVER AND OVER AGAIN. YOU ALSO NEED TO LIKE TO WORK NEAR OTHER PEOPLE AND FOLLOW DIRECTIONS WELL. SOMETIMES PEOPLE WHO DO WELL IN THESE JOBS ARE PROMOTED TO BETTER JOBS. SOME MAY BECOME FOREMEN OR INSPECTORS. OTHERS MAY LEARN TO WORK ON MACHINES WHICH TAKE A LONG TIME TO LEARN TO RUN. THIS WORK TASK WILL TELL US OTHER THINGS ABOUT YOU. IT WILL HELP US FIND OUT HOW WELL YOU CAN MOVE YOUR HANDS AND



FINGERS. THIS WORK TASK WILL ALSO TELL US HOW LONG YOU CAN DO THE SAME THING WITHOUT GETTING MAD AT THE JOB, BORED, OR TIRED. DO YOU HAVE ANY QUESTIONS?

If the subject has no questions, begin to read the instructions and demonstrate the work task unit.

Evaluator's Note: When the subject is standing facing the work task unit:

SAY:

THIS IS THE INDEX CARD WORK TASK. IT IS USED TO TELL HOW WELL YOU USE BOTH HANDS AT THE SAME TIME. IT ALSO TELLS HOW WELL YOU CAN WORK WITH YOUR FINGERS.

Evaluator's Note: Place the subject's hands on the work sample and guide them through the explanation procedure:

SAY:

IN FRONT OF YOU IS THE WORK TASK UNIT. THE TOP IS FLAT WITH A DIVIDER IN THE CENTER. IT HAS A METAL BOX AT ONE END. ON YOUR LEFT IS A PLASTIC BOX FILLED WITH INDEX CARDS. TO YOUR RIGHT IS ANOTHER EMPTY PLASTIC BOX.

Evaluator's Note: Orient subject to the location of the holding boxes.

SAY:

PICK UP TWO INDEX CARDS. PUT ONE ON EACH SIDE OF THE DIVIDER. MAKE SURE THE SHORT ENDS OF THE CARDS ARE TOWARD YOU. MOVE THE CARDS TOWARD EACH OTHER UNTIL THEY TOUCH THE DIVIDER. THEN



PUSH THE TWO CARDS UP UNTIL THEY STOP. HOLD THEM LIKE THIS UNTIL YOU HEAR TWO CLICKS. ONCE YOU HEAR THE CLICKS, PUT THE RIGHT CARD IN THE EMPTY PLASTIC BOX TO YOUR RIGHT. PUT THE LEFT INDEX CARD ON THE RIGHT SIDE OF THE DIVIDER. TAKE A NEW CARD FROM THE PLASTIC BOX ON YOUR LEFT. PUT THIS CARD ON THE LEFT SIDE OF THE DIVIDER. PUSH BOTH CARDS TOGETHER AND UP. WAIT FOR THE TWO CLICKS AND DO IT AGAIN.

Evaluator's Note: Let the subject practice this routine two or three times.

SAY:

IF THE CARDS DO NOT TOUCH THE DIVIDER AND ARE NOT PUSHED FORWARD ALL THE WAY, A BUZZER WILL SOUND. DO YOU HAVE ANY QUESTIONS?

Evaluator's Note: Activate time and buzzer; let subject practice two or three times.

B. Practice Session

SAY:

YOU ARE GOING TO PRACTICE FOR 10 MINUTES. THE TIMER IS ON. WORK AS FAST AS YOU CAN. YOU WILL HAVE 4 SECONDS TO PUT THE CARDS INTO PLACE. WHEN THE TIMER CLICKS, MOVE THE CARDS. IF THE BUZZER SOUNDS, TRY TO GET THE CARDS INTO THE RIGHT POSITION. DO YOU HAVE ANY QUESTIONS?

Evaluator's Note: Answer any questions and begin the trial period. Remember to clear the total and error indicators and set the work pace timer.



SAY:

READY, START

C. Performance Session

Evaluator's Note: Make sure timer is set at 4 seconds and the total response counter and the error counter are cleared to zero.

SAY:

ARE YOU READY TO START? YOU WILL WORK FOR 50 MINUTES. TRY
TO WORK AS FAST AS YOU CAN. READY? START.

START TIMING

Evaluator's Note: Check frequently for signs of frustration, fatigue, and accuracy of work task. Be sure to record your observations.



IV. SCORING

A. Criteria. The individual's score is obtained by determining how closely their work rate approaches the sighted standard. This score, or percent of the sighted standard, is computed by subtracting the number of error responses from total responses. The result is the number of correct responses. To obtain the percent of the sighted standard, the number of correct responses must be divided by the average number of manipulations completed by the sighted subjects (see Section II: Instructions to the Evaluator, part B: Work Task Conditions).

Other observed information must also be recorded. This information should include reaction to the error indicator and the subject's preference for left or right hand and for sitting or standing. Also record any signs of fatigue, frustration, or anxiety, as well as any general observations about the individual's attitude toward the task.



V. CONSTRUCTION

A. Description - The INDEX CARD WORK TASK UNIT includes an error indication system, and a dual contact relay. These electrical systems are all operated by impulses fed to the INDEX CARD WORK TASK UNIT from the Work Pace Timer.

The error indication system, composed of a buzzer and an electrical impulse counter, is activated when either one or both of the contacts on the dual contact relay are allowed to close. If the error indication system is activated, then the buzzer will sound and the electrical impulse counter will register, showing the number of errors made. The error indication system will not be activated if the contacts on the dual contact relay are not allowed to close because a material (such as an index card) has been placed between the "jaws" of the contact.

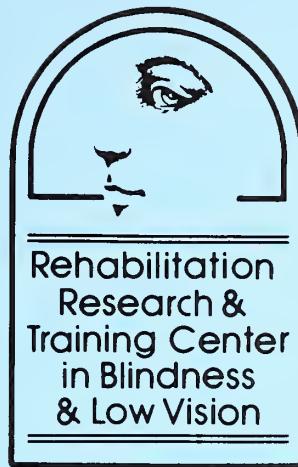
The error indication system is controlled by three toggle switches located on top of the INDEX CARD WORK TASK UNIT. The toggle switch on the right side of the unit controls the right side of the dual contact relay. The toggle switch on the left controls the left side of the dual contact relay. By setting either toggle switch in the "off" position, the corresponding side of the dual contact relay will become inoperable and will not activate the error indication system even if the jaws of the contact do close. The toggle switch located in the center of the INDEX CARD WORK TASK UNIT controls the buzzer of the error indication system. When this toggle switch is in the "off" position, the buzzer will not be activated when an error is made, but the electrical impulse counter will continue to register.

The cycle completion indication system is composed of the electrical impulse counter located on the top left of the INDEX CARD WORK TASK UNIT. It is activated each and every time the Work Pace Timer feeds an impulse to the INDEX CARD WORK TASK UNIT and therefore registers the total number of times the trainee should perform the work task.



B. Materials List

<u>QUANTITY</u>	<u>DESCRIPTIONS</u>
1	PRD7AY0-120 V P&B Dual Contact Switch
3	8350CG Arrow Hart Switch
1	BU 120 V P&B Buzzer
1	4-140 Cinch Jones Terminal Strip
1	160-5N Recessed Male Amphenol Connector
1	CU-1124 Bud Box
2	743895-211 Veeder Root Electrical Impulse Counter



Multifunctional Work Task Unit

Electromechanical Vocational Assessment Manuals



NATIONAL INDUSTRIES
FOR THE BLIND



MULTIFUNCTIONAL WORK TASK UNIT

an Electromechanical Vocational Assessment Manual

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National Industries for the Blind

February, 1983

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ACKNOWLEDGEMENT

The preparation of these manuals was dependent upon extensive development and experimental work sponsored by the National Industries for the Blind. The Rehabilitation Research and Training Center recognizes that without their support and the work done at Royal Maid Association for the Blind, the study that produced these manuals could not have been conducted.

In addition, many individuals contributed to the reliability and validity study from which these manuals were developed. Data were collected in Mississippi at Mississippi Industries for the Blind, Addie McBryde Rehabilitation Center, Royal Maid Association for the Blind (Hazelhurst and Tupelo), and the Regional Rehabilitation Center. Data were also collected at Louisiana Association for the Blind in Shreveport. The Rehabilitation Research and Training Center is grateful to the subjects and evaluators who contributed their time and energy.

It is hoped that these manuals and the work samples that they accompany will help to increase the employability of blind and visually impaired persons in general and multihandicapped blind persons in particular. The work of many professionals and multihandicapped blind persons has contributed to this effort, and we thank them all.



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DIAGRAM

Multifunctional Work Task Unit 5



I. INTRODUCTION

A. Title - MULTIFUNCTIONAL WORK TASK UNIT

B. Description - The MULTIFUNCTIONAL WORK TASK UNIT is designed to provide a flexible system of evaluating a variety of work abilities, including bi-manual coordination, material control, and kinesthetic memory. The task also provides an objective method of comparing a blind or visually impaired person's performance in these work abilities against the performance expected from an average sighted worker. This work task can also be used to provide work adjustment training.

When the work task is being used for an evaluation, the recommended procedures should be followed as closely as possible in order to accurately compare the visually impaired person's performance with the sighted standard. In a work adjustment situation, the procedures may need to be modified in order to accommodate the learning styles and special needs of persons with severe visual impairments or multiple handicaps.

The MULTIFUNCTIONAL WORK TASK UNIT was developed to be used with the Work Pace Timer. The timer can be used with visually impaired persons as well as other disabled and nondisabled populations. This work task can be administered to individuals who have varying degrees of work experience.

C. Work Abilities Assessed - The MULTIFUNCTIONAL WORK TASK UNIT is designed to assess the following work abilities:*

1. Bi-manual Coordination - the ability to move both hands in order to maintain a specified relationship between them.
2. Material Control - the ability to maintain the appropriate direction of various types of raw materials during processing by hand and power tools.
3. Kinesthetic Memory - the ability to appreciate and retain proportion, distance, and contour by touch.

*Richterman, H. Innovative evaluation procedures as developed at the Royal Maid Association for the Blind, a demonstration workshop and vocational rehabilitation services program of National Industries for the Blind. New York: National Industries for the Blind, 1982.
Additional work has been done in this area by George Aarons and William Sparkman at Royal Maid Association for the Blind, Inc.



D. Reliability and Validity - The reliability and validity of this work task are currently being tested in a National Industries for the Blind and Mississippi State University Rehabilitation Research and Training Center cooperative project.



II. INSTRUCTIONS TO THE EVALUATOR

A. Prerequisites - No tests or other work samples are required prior to the administration of this work task. However, the evaluator should be aware of any upper extremity impairments which would interfere with the range of motions required in this work task. It is also important to be aware of any mental impairments that might affect the individual's ability to understand certain tasks.

B. Work Task Conditions - The work task should be set up indoors. A quiet area with few distractions will facilitate using the work task for work adjustment training. The subject may sit or stand during administration. Whether the subject chooses to sit or stand should be recorded. No special clothing or safety equipment is required.

It is important that the evaluator follow the instructions carefully. The instructions must be read each time the work task is conducted to ensure uniform administration. All the instructions should be presented in a casual, relaxed manner. If the subject appears confused, elaborations or additional explanations should be provided. Verbal explanations will not be enough, and the evaluator will need to guide the subject's hands through the task. It is sometimes helpful to place the subject's hands on top of the evaluator's hands while the equipment and process to be followed are being explained. Any questions should be answered during and after the orientation.

Following the evaluator's demonstration, the subject practices until the entire task is completed three successive times. Then the timer is started, and the subject practices the task for 10 minutes. During this practice trial the evaluator should determine if the subject understands how the task is performed. The evaluator should watch closely for deviations from the standard procedures and make whatever corrections are necessary. If the subject does not understand the process, it is the responsibility of the evaluator to take steps to ensure that the subject does understand before initiating the evaluation procedure.

The Methods-Time Measurement Procedure was used to develop the average sighted standard for this work task. This is a procedure which breaks down a manual operation or method into the basic motions required to perform it. Each motion is assigned a time standard based upon the nature of the motion and the conditions under which it is made.

To develop the standard for this work task unit five sighted subjects worked on the task for 50 minutes. The highest and the lowest scores of the five were disregarded. The remaining three scores were averaged. The result was 750 manipulations per 50 minute period. Thus the interval for each manipulation is computed at 4 seconds.



C. Administration Equipment - The following equipment is required prior to administration:

1. One Work Pace Timer
2. One Multifunctional Work Task Unit
3. Two boxes containing 1000 dowels each
4. 2000 six inch dowels
5. Two tall plastic containers (trash cans) for used dowels
6. One work stool with adjustable height
7. One copy of this manual

D. Set-up and Breakdown - Prior to administration, the evaluator should check the placement of all plastic containers and dowels. Before beginning the task, the total and error indicators must be cleared to zero and the Work Pace Timer set on four seconds.

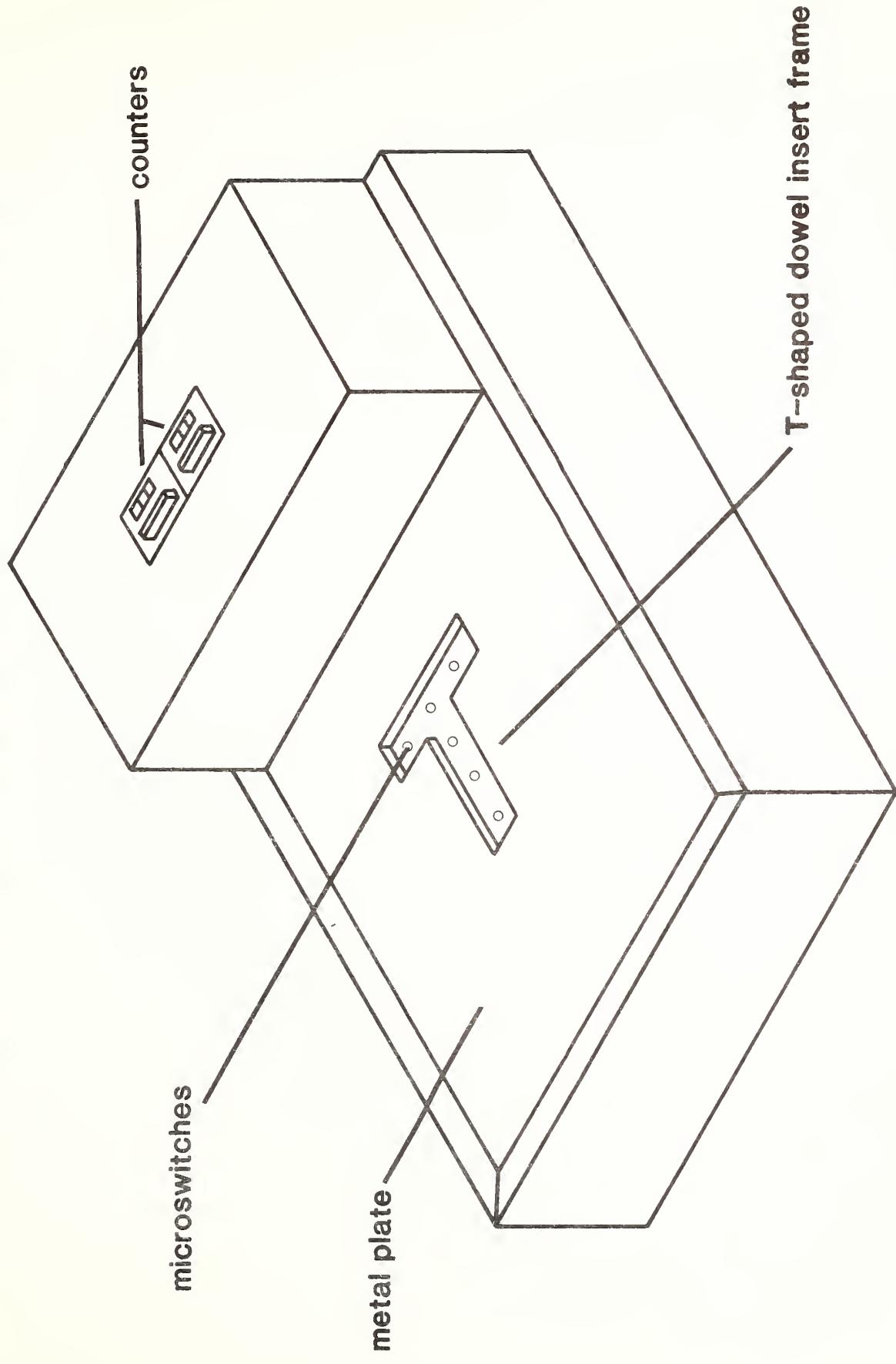
Disassembly should not take place until the subject has completed a ten minute practice period and a fifty minute trial period. There are two ways that the unit can be disassembled:

1. Upon completion of the fifty minute trial the subject can replace the dowels in the boxes.
2. The evaluator can replace the dowels in the boxes.

It is recommended that in an evaluation setting the evaluator disassemble the unit.



MULTIFUNCTIONAL WORK TASK UNIT



III. ADMINISTRATION

A. Client Orientation

Note to Evaluator: Present this orientation to each subject before administering the MULTIFUNCTIONAL WORK TASK. This material does not have to be read verbatim, but all information should be covered. Present the material informally and pause to answer questions as asked. The purpose of this orientation is to inform the subject about:

1. jobs which are related to this work task, and
2. specific traits or characteristics on which he is being evaluated.

SAY:

IN A FEW MINUTES YOU WILL DO A MULTIFUNCTIONAL WORK TASK. THIS WILL HELP US FIND OUT A FEW THINGS ABOUT YOU. ONE OF THE THINGS IT WILL TELL US IS HOW WELL YOU PUT PARTS TOGETHER. IT WILL ALSO TELL US IF YOU LIKE THIS KIND OF WORK. LET ME TELL YOU A FEW THINGS ABOUT THIS KIND OF WORK. MANY OF THE THINGS WE USE ARE PUT TOGETHER IN FACTORIES BY PEOPLE CALLED "ASSEMBLERS." THESE PEOPLE JOIN SMALL OR LARGE PARTS TO MAKE THINGS SUCH AS LAMPS, TOASTERS, DOLLS, AND TV SETS. IF YOU WORKED IN ONE OF THESE JOBS, YOU WOULD WORK IN A FACTORY WITH OTHER PEOPLE DOING JOBS LIKE YOURS. YOU HAVE TO BE GOOD WITH YOUR HANDS AND BE ABLE TO DO THE SAME THING OVER AND OVER AGAIN. YOU ALSO NEED TO LIKE TO WORK NEAR OTHER PEOPLE AND FOLLOW DIRECTIONS WELL. SOMETIMES PEOPLE WHO DO WELL IN THESE JOBS ARE PROMOTED TO BETTER JOBS. SOME MAY BECOME FOREMEN OR INSPECTORS. OTHERS MAY LEARN TO WORK ON MACHINES WHICH TAKE A LONG TIME TO LEARN TO RUN. THIS WORK TASK WILL TELL US OTHER THINGS ABOUT YOU. IT WILL HELP US FIND OUT HOW WELL YOU CAN MOVE YOUR HANDS AND FINGERS. THIS WORK TASK WILL ALSO TELL US HOW LONG YOU CAN DO THE SAME THING WITHOUT



GETTING MAD AT THE JOB, BORED, OR TIRED.

DO YOU HAVE ANY QUESTIONS?

If the subject has no questions, begin to read the instructions and demonstrate the work task unit. These instructions are written for a right handed subject. If the subject is left handed and finds the method described here awkward, the left and right handed tasks should be reversed.

Evaluator's Note: When the subject is facing the work task unit:

SAY:

THIS IS THE MULTIFUNCTIONAL WORK TASK. IT IS USED
TO TELL HOW WELL YOU USE BOTH HANDS AT THE SAME TIME.
IT ALSO TELLS HOW WELL YOU CAN HANDLE ITEMS.

Evaluator's Note: Move the subject's hands across the template while describing the "T" shape and the location of the micro-switches. The subject may understand your instructions better if you refer to the dowels as rods or sticks.

SAY:

IN FRONT OF YOU IS A BOX WITH A METAL PLATE ON TOP. THE METAL PLATE HAS TWO LONG BOXES CUT OUT OF IT. THE CUT-OUTS FORM A "T" SHAPE. (Show the subject the "T" shape.) INSIDE THIS "T" SHAPE ARE SIX BUTTONS. WHEN ALL SIX BUTTONS ARE HELD DOWN AT ONCE YOU WILL HEAR TWO CLICKS. IF THEY ARE NOT ALL HELD DOWN AT ONCE, A BUZZER WILL SOUND. ON BOTH SIDES OF THE BOX WITH THE METAL PLATE ON TOP ARE BOXES HOLDING WOODEN RODS. THESE RODS ARE



SIX INCHES LONG. THEY ARE ABOUT THE SAME WIDTH AS A BROOM HANDLE. THERE ARE TWO LARGE TRASH CANS ON THE FLOOR ON EACH SIDE OF YOU. THESE TRASH CANS WILL HOLD THE RODS AFTER YOU HAVE USED THEM.

Evaluator's Note: Orient subject to dowels, containing boxes, and holding boxes.

SAY:

TAKE ONE ROD IN EACH HAND. THE ROD HELD IN YOUR RIGHT HAND MUST BE PUT IN THE SLOT ON THE METAL PLATE SO ONE END POINTS TOWARD YOU AND ONE POINTS AWAY FROM YOU. THE ROD HELD IN YOUR OTHER HAND IS PLACED IN THE SLOT AT THE TOP OF THE METAL PLATE. ONE END MUST POINT TO THE RIGHT WHILE THE OTHER END POINTS TO THE LEFT. PUSH BOTH RODS DOWN FIRMLY. MAKE SURE ALL THE BUTTONS ARE PUSHED DOWN. AFTER YOU HEAR THE CLICKS, PUT THE ROD IN YOUR RIGHT HAND IN THE TRASH CAN BESIDE YOUR RIGHT LEG. THE ROD IN YOUR LEFT HAND GOES IN THE TRASH CAN BESIDE YOUR LEFT LEG.

Evaluator's Note: Let the subject practice this routine two or three times, and if necessary, adjust his seat height if he is seated.

SAY:

IF THE BUTTONS ARE NOT ALL PRESSED DOWN BY THE RODS, THE BUZZER WILL SOUND. IF ALL THE BUTTONS ARE PRESSED DOWN



YOU WILL HEAR TWO CLICKS.

DO YOU HAVE ANY QUESTIONS?

Evaluator's Note: Activate timer and buzzer; let subject practice two or three times.

B. Practice Session

SAY:

YOU ARE GOING TO PRACTICE FOR TEN MINUTES. THE TIMER WILL BE ON, SO WORK AS FAST AS YOU CAN. YOU WILL HAVE FOUR SECONDS TO PUT THE RODS IN THE SLOTS ON THE METAL PLATE AND HOLD DOWN THE BUTTONS. IF YOU HEAR TWO CLICKS, DROP THE RODS INTO THE TRASH CANS ON THE FLOOR AND KEEP ON WORKING. IF YOU HEAR THE BUZZER, TRY TO MOVE THE RODS ON THE METAL PLATE UNTIL THEY ARE IN THE RIGHT PLACE. THEN PUSH THE RODS DOWN FIRMLY. DO YOU HAVE ANY QUESTIONS?

Evaluator's Note: Answer any questions and begin the trial period. Remember to clear the total and error indicators and set the work pace timer.

SAY:

READY, START.



C. Performance Session

Evaluator's Note: Make sure the timer is set at 4 seconds and the total response counter and the error counter are cleared to zero.

SAY:

ARE YOU READY TO START? YOU WILL WORK FOR 50 MINUTES. TRY
TO WORK AS FAST AS YOU CAN. READY? START.

START TIMING

Evaluator's Note: Check frequently for signs of frustration, fatigue, and accuracy of work task. Be sure to record your observations.



IV. SCORING

A. Criteria. The individual's score is obtained by determining how closely their work rate approaches the sighted standard. This score, or percent of the sighted standard, is computed by subtracting the number of error responses from total responses. The result is the number of correct responses. To obtain the percent of the sighted standard, the number of correct responses must be divided by the average number of manipulations completed by the sighted subjects (see Section II: Instructions to the Evaluator, part B: Work Task Conditions).

Other observed information must also be recorded. This information should include reaction to the error indicator and the subject's preference for left or right hand and for sitting or standing. Also record any signs of fatigue, frustration, or anxiety, as well as any general observations about the individual's attitude toward the task.



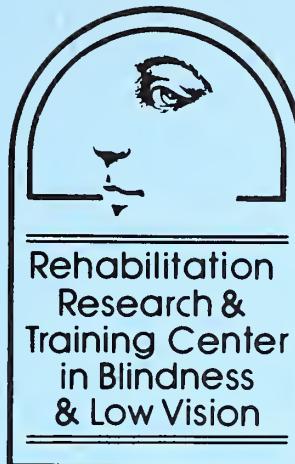
V. CONSTRUCTION

A. Description - The MULTIFUNCTIONAL WORK TASK UNIT includes an Error Indicator System, a Cycle Completion Indication System, a series of microswitches wired in parallel, and a variety of interchangeable templates. These electrical systems are all operated by impulses fed to the work task unit from the Work Pace Timer. The Total Cycle Electrical Impulse Counter located on the left of the Unit records the number of cycles completed. The Electrical Impulse Counter located on the right of the Unit is part of the Error Indication System and records the number of errors a trainee makes during the time periods.

With the templates securely in place and all of the microswitches depressed (not left exposed by the openings of the template), the MULTIFUNCTIONAL WORK TASK UNIT is ready for operation. All exposed microswitches must be depressed for the Work Pace Timer to send an electrical impulse to the MULTIFUNCTIONAL WORK TASK UNIT. If all microswitches are depressed, then the Error Indication System will not be activated, the Error Indication Electrical Impulse Counter will not sound. If one (or more) microswitch is not depressed when the Work Pace Timer sends an electrical impulse to the MULTIFUNCTIONAL WORK TASK UNIT, then the Error Indication System will be activated, the buzzer will sound, and the Electrical Impulse Counter will register an error. The buzzer, when activated, provides immediate feedback to the trainee that his work performance does not meet the expected standard.

B. Materials List

<u>Quantity</u>	<u>Description</u>
6	BZ-2R01-A2 Microswitches
2	742895-211 Veeder Root Electrical Counter
1	BU 120V P & B Buzzer
1	160-5N Recessed Male Amphenol Connector
5 ft.	1" x 4" fir
$\frac{1}{2}$ sheet	4' x 8' x $\frac{1}{4}$ " Masonite Pegboard (for template and switchbase)
4	Mounting screws and wing nuts
1	CU-1124 Bud box
	Wood screws and glue (as needed)



Revolving Assembly Table Work Task Unit

Electromechanical Vocational Assessment Manuals



NATIONAL INDUSTRIES
FOR THE BLIND



REVOLVING ASSEMBLY TABLE WORK TASK UNIT

an Electromechanical Vocational Assessment Manual

Rehabilitation Research and Training Center
on Blindness and Low Vision
at Mississippi State University

National Industries for the Blind

February, 1983

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I. INTRODUCTION

A. Title - REVOLVING ASSEMBLY TABLE WORK TASK

B. Description - The REVOLVING ASSEMBLY TABLE WORK TASK UNIT is designed to provide a flexible system of evaluating a variety of work abilities, including bi-manual coordination, finger dexterity, kinesthetic memory, and ability to work with others. The task also provides an objective method of comparing a blind or visually impaired person's performance in these work abilities against the performance expected from an average sighted worker. This work task can also be used to provide work adjustment training.

When the work task is being used for an evaluation, the recommended procedures should be followed as closely as possible in order to assure uniformity of the evaluation. In a work adjustment situation, the procedures may need to be modified in order to accomodate the learning styles and special needs of persons with severe visual impairments or multiple handicaps.

The REVOLVING ASSEMBLY TABLE WORK TASK UNIT can be administered to individuals who have varying degrees of work experience. This work task is designed so that at least two people work together. Their tasks are interdependent. All subjects must be given instructions and must practice the work task together.

C. Work Abilities Assessed - The REVOLVING ASSEMBLY TABLE WORK TASK UNIT is designed to assess the following work abilities:*

1. Bi-manual Coordination - the ability to move both hands so as to maintain any desired relationship between them.
2. Finger Dexterity - the ability to move a finger or fingers purposefully.
3. Kinesthetic Memory - the ability to appreciate and retain proportion, distance, and contour by touch.
4. Ability to Work With Others.

*Richterman, H. Innovative evaluation procedures as developed at the Royal Maid Association for the Blind, a demonstration workshop and vocational rehabilitation services program of National Industries for the Blind. New York: National Industries for the Blind, 1982. Additional work has been done in this area by George Aarons and William Sparkman at Royal Maid Association for the Blind, Inc.



D. Reliability and Validity - The reliability and validity of this work task unit are currently being tested in a National Industries for the Blind and Mississippi State University Rehabilitation Research and Training Center cooperative project.



II. INSTRUCTIONS TO THE EVALUATOR

A. Prerequisites - No tests or other work samples are required prior to the administration of this work task. However, the evaluator should be aware of any upper extremity impairments which would interfere with the range of motions required in this work task. It is also important to be aware of any mental impairments that might affect the individual's ability to understand certain tasks.

B. Work Task Conditions - The work task should be set up indoors. A quiet area with few distractions will facilitate using the work task for work adjustment training. The subjects stand during administration. No special clothing or safety equipment is required.

It is important that the evaluator follow the instructions carefully. The instructions must be read each time the work task is conducted to ensure uniform administration. All the instructions should be presented in a casual, relaxed manner. If the subject appears confused, elaborations or additional explanations should be provided. Verbal explanations will not be enough, and the evaluator will need to guide the subject's hands through the task. It is sometimes helpful to place the subject's hands on top of the evaluator's hands while the equipment and process to be followed are being explained. Any questions should be answered during and after the orientation.

Following the evaluator's demonstration, the subject practices until the entire task is completed three successive times. Then the timer is started, and the subjects practice the task for 10 minutes. During this practice trial the evaluator should determine if the subjects understand how the task is performed. The evaluator should watch closely for deviations from the standard procedures and make whatever corrections are necessary. If the subjects do not understand the process, it is the responsibility of the evaluator to take steps to ensure that they do understand before initiating the evaluation procedure.

Because of the team nature of this task, there is no sighted standard.

C. Administration Equipment - The following equipment is required prior to administration:

1. One Revolving Assembly Table Work Task Unit
2. 168 wing nuts (5/16")
3. 168 $\frac{1}{2}$ " machine screws
4. 168 nuts
5. 168 plastic vials 2-1/8" x 1" diameter



6. 168 caps for vials
7. 6 plastic bins
8. 168 bolts
9. One work stool with adjustable height for each subject
10. One copy of this manual

D. Set-up and Breakdown - Prior to administration, the evaluator should check the placement and contents of all bins. The disc that moves the table must be set on 5 revolutions per minute.

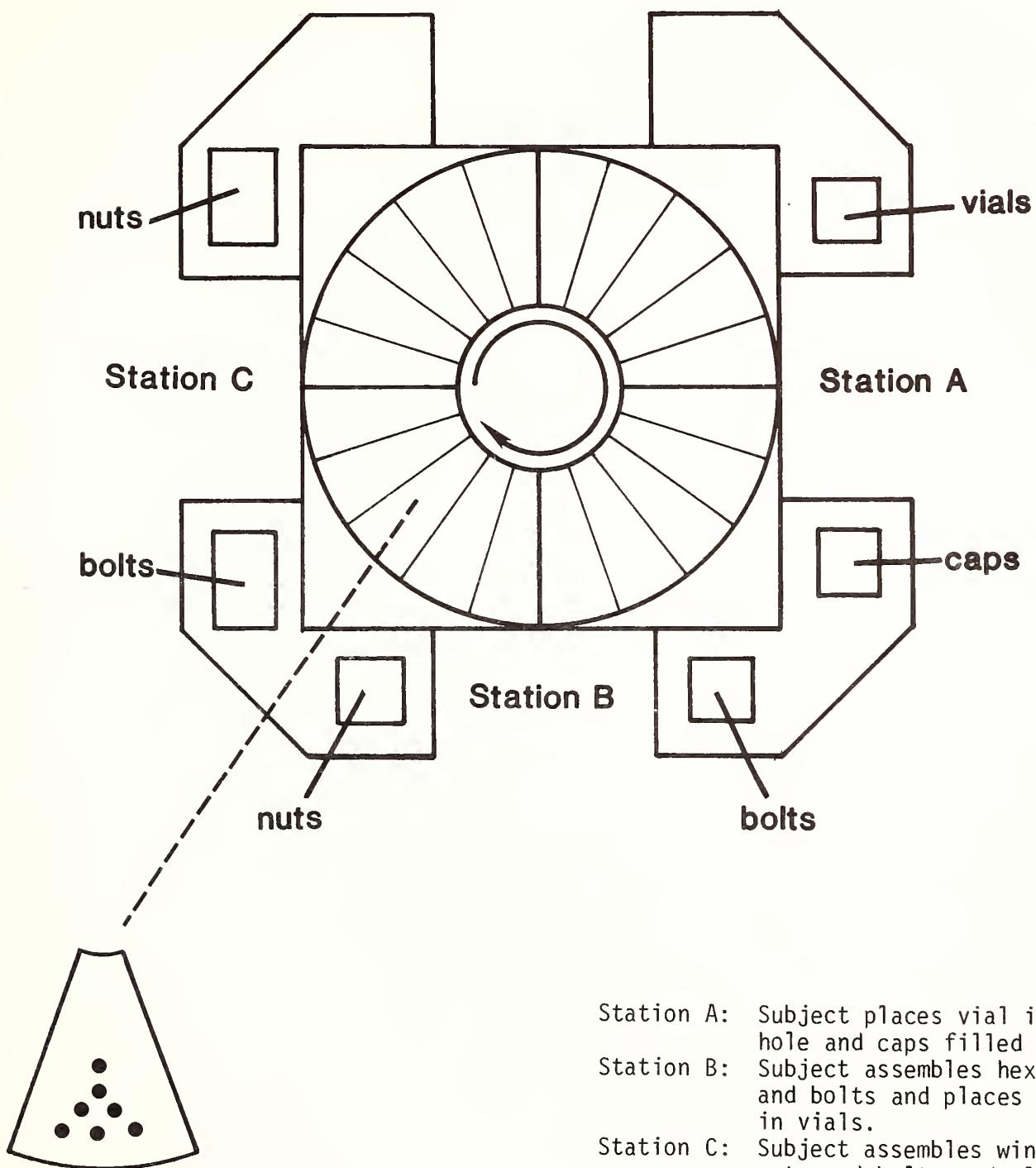
Disassembly should not take place until all 168 holes have been filled. After the practice trial the vials must be taken out so that the subjects can start over. There are two ways that the unit can be disassembled:

1. Upon completion of all 168 holes, the subjects can replace the materials into the proper boxes.
2. The evaluator can replace the materials into the proper boxes.

It is recommended that in an evaluation setting the evaluator disassemble the unit.



REVOLVING ASSEMBLY TABLE WORK TASK UNIT



- Station A: Subject places vial in hole and caps filled vials.
- Station B: Subject assembles hex nuts and bolts and places them in vials.
- Station C: Subject assembles wing nuts and bolts and places them in vials.

enlargement of
central section
showing hole
placements



III. ADMINISTRATION

A. Client Orientation

Note to Evaluator: Present this orientation to each subject before administering the REVOLVING ASSEMBLY TABLE WORK TASK. This material does not have to read verbatim, but all information should be covered. Present the material informally and pause to answer questions as asked. The purpose of this orientation is to inform the subject about:

1. jobs which are related to this work task, and
2. specific traits or characteristics on which he is being evaluated.

SAY:

IN A FEW MINUTES YOU WILL DO A REVOLVING ASSEMBLY TABLE WORK TASK. THIS WILL HELP US FIND OUT A FEW THINGS ABOUT YOU. ONE OF THE THINGS IT WILL TELL US IS HOW WELL YOU PUT PARTS TOGETHER. IT WILL ALSO TELL US IF YOU LIKE THIS KIND OF WORK. LET ME TELL YOU A FEW THINGS ABOUT THIS KIND OF WORK. MANY OF THE THINGS WE USE ARE PUT TOGETHER IN FACTORIES BY PEOPLE CALLED "ASSEMBLERS." THESE PEOPLE JOIN SMALL OR LARGE PARTS TO MAKE THINGS SUCH AS LAMPS, TOASTERS, DOLLS, AND TV SETS. IF YOU WORKED IN ONE OF THESE JOBS, YOU WOULD WORK IN A FACTORY WITH OTHER PEOPLE DOING JOBS LIKE YOURS. YOU HAVE TO BE GOOD WITH YOUR HANDS AND BE ABLE TO DO THE SAME THING OVER AND OVER AGAIN. YOU ALSO NEED TO LIKE TO WORK NEAR OTHER PEOPLE AND FOLLOW DIRECTIONS WELL. SOMETIMES PEOPLE WHO DO WELL IN THESE JOBS ARE PROMOTED TO BETTER JOBS. SOME MAY BECOME FOREMEN OR INSPECTORS. OTHERS MAY LEARN TO WORK ON MACHINES WHICH TAKE A LONG TIME TO LEARN TO RUN. THIS WORK TASK WILL TELL US OTHER THINGS ABOUT YOU. IT WILL HELP US FIND OUT HOW WELL YOU CAN MOVE YOUR HANDS AND FINGERS. THIS WORK TASK WILL ALSO TELL US HOW LONG YOU CAN



DO THE SAME THING WITHOUT GETTING MAD AT THE JOB, BORED, OR TIRED. IT WILL ALSO TELL US HOW WELL YOU WORK WITH OTHER PEOPLE. DO YOU HAVE ANY QUESTIONS?

If the subjects have no questions, begin to read the instructions and demonstrate the work task unit. Unless otherwise noted, instructions are for all subjects.

Evaluator's Note: When the subjects are standing facing the table:

SAY:

THIS IS A REVOLVING ASSEMBLY TABLE. THIS WORK TASK WILL SHOW HOW WELL YOU WORK WITH OTHERS. IT WILL ALSO SHOW HOW WELL YOU USE BOTH OF YOUR HANDS AT THE SAME TIME.

Evaluator's Note: Move the subjects' hands around the disc and orient them to the location of the holes.

SAY:

IN FRONT OF YOU IS A ROUND TABLE. THIS TABLE MOVES FROM YOUR RIGHT TO YOUR LEFT. THE TABLE HAS HOLES IN IT. THERE ARE FOUR ROWS OF HOLES. THE HOLES ARE ALSO SPACED TO FORM GROUPS. THERE ARE 3 HOLES IN EACH GROUP ON THE BOTTOM ROW AND TWO ON THE NEXT ROW. THE HOLES ON THE NEXT TWO ROWS ARE NOT SPACED IN GROUPS.

SAY TO SUBJECT A:

ON YOUR RIGHT IS A BOX HOLDING ROUND PLASTIC BOTTLES OR VIALS. THEY ARE A LOT LIKE THE BOTTLES PILLS COME IN. THE BOX ON YOUR LEFT HOLDS CAPS FOR THESE BOTTLES. PLACE A BOTTLE IN A HOLE ON THE BOTTOM ROW. WHEN THIS BOTTLE RETURNS TO YOU, PLACE



A CAP ON IT. YOU WILL HAVE TO MONITOR THE TABLE'S MOVEMENT WITH YOUR HAND. AT THE SAME TIME PLACE A BOTTLE IN THE ONE HOLE ON THE NEXT ROW. WHEN IT RETURNS PLACE A CAP ON IT AND PUT A BOTTLE IN NEXT HOLE. KEEP WORKING LIKE THIS UNTIL ALL THE HOLES IN THE FIRST ROW ARE FILLED. THEN BEGIN AGAIN WITH THE NEXT ROW. KEEP PUTTING BOTTLES IN THE HOLES AND PUTTING ON CAPS UNTIL ALL THE HOLES IN THE TABLE ARE FULL.

SAY TO SUBJECT B:

ON YOUR RIGHT IS A BOX HOLDING BOLTS. ON YOUR LEFT IS A BOX HOLDING NUTS. PICK UP ONE NUT AND ONE BOLT AT THE SAME TIME. TWIST THE NUT ONTO THE BOLT. PUT THE NUT AND BOLT ASSEMBLY INTO THE EMPTY BOTTLE AS IT PASSES IN FRONT OF YOU. THE FIRST EMPTY BOTTLE WILL BE IN THE BOTTOM ROW. YOU WILL FIND IT BY PUTTING YOUR HAND ON THE TABLE AS IT MOVES PAST YOU. AFTER YOU FILL IT, PUT A NUT AND BOLT ASSEMBLY IN THE NEXT BOTTLE ON THE NEXT ROW. WHEN THE BOTTOM ROW IS FULL, YOU WILL BEGIN THE SECOND ROW. KEEP WORKING LIKE THIS UNTIL ALL THE HOLES ARE FULL.

Evaluator's Note: If three subjects are used, the instructions are the same for subject B and C. However, subject B must use hex nuts and subject C must use wing nuts.

Evaluator's Note: Orient subjects to all holding boxes. Holding boxes may be reversed for left handed subjects.

SAY:

REMEMBER THAT THE TABLE WILL BE MOVING ALL THE TIME. YOU MUST FILL ALL OF THE HOLES.



Evaluator's Note: Activate turn table by flipping the toggle switch located on the leg of the table to demonstrate to the subjects. Make sure that the rheostatically controlled switch is set on 5 revolutions per minute. Check by placing a vial on the table and counting the revolutions per minute.

B. Practice Session

SAY:

YOU ARE GOING TO PRACTICE BY DOING TWO GROUPS OF HOLES. IF YOU MISS PUTTING IN A BOTTLE OR YOUR NUT AND BOLT, WAIT UNTIL THE TABLE COMES AROUND AGAIN. ARE THERE ANY QUESTIONS? READY, START.

C. Performance Session

SAY:

ARE YOU READY TO BEGIN? YOU WILL WORK AS A TEAM FOR 50 MINUTES OR UNTIL THE TABLE IS FULL. START WORKING.

START TIMING

Evaluator's Note: Check each worker frequently for worker characteristics listed on the report form. Be sure to record your observations.



IV. SCORING

A. Criteria. The individual's score is obtained by using observational criteria and subjective ratings. It is not possible to compute a sighted standard for each work station, nor would it be appropriate. The purpose of this work task unit is to observe how the individual uses his or her work abilities when working with others.

A sample observation sheet is included. These 17 worker characteristics are only a sample of the types of things the evaluator should be observing.

Other observed information must also be recorded. This information should include reactions to the error indicator and the subjects' preferences for left or right hand. Also record any signs of fatigue, frustration, or anxiety, as well as any general observations about attitudes toward the tasks.



REVOLVING ASSEMBLY TABLE
SAMPLE RATING SHEET

Worker Characteristics	Low					High	
	1	2	3	4	5		
1. Ability to follow instructions							
2. Ability to maintain physical stamina	1	2	3	4	5		
3. Ability to concentrate on tasks	1	2	3	4	5		
4. Ability to maintain motivation	1	2	3	4	5		
5. Ability to communicate	1	2	3	4	5		
6. Ability to make decisions	1	2	3	4	5		
7. Ability to control frustration level	1	2	3	4	5		
8. Ability to conceptualize the problem	1	2	3	4	5		
9. Ability to respond to change	1	2	3	4	5		
10. Ability to continue in spite of opposition	1	2	3	4	5		
11. Ability to maintain an even temperament	1	2	3	4	5		
12. Ability to believe in or rely on oneself	1	2	3	4	5		
13. Ability to accept supervision	1	2	3	4	5		
14. Ability to compete	1	2	3	4	5		
15. Ability to cooperate with others	1	2	3	4	5		
16. Ability to work alone	1	2	3	4	5		
17. Ability to tolerate pressure	1	2	3	4	5		

COMMENTS:



V. CONSTRUCTION

A. Description

The REVOLVING ASSEMBLY TABLE consists of a table mounted, motor-driven Revolving Disc with a Variable Speed Control, allowing the speed at which the disc revolves to be either increased or decreased. Inter-changeable Templates cover the surface of the Revolving Disc providing for a variety in the type of work which can be performed on the Revolving Assembly Table. The REVOLVING ASSEMBLY TABLE can be used with from one to eight trainees at a time depending upon the nature and purpose of the work task. Through the use of the Variable Speed Control, the trainee may be allowed to work at a slower beginning pace and then be gradually challenged to increase his/her productivity as the Revolving Disc is speeded up.

B. Materials List

<u>MATERIAL</u>	<u>QUANTITY</u>	<u>BRAND OR CODE NO.</u>
Band 47 3/4" dia. x 2 3/4 wide	1	Fab. Steel
Band 24" dia. x 4" wide	1	Fab. Steel
1/4" plate 4 x 4	1 pc.	Fab. Steel
1/4" plate 12" dia.	1 pc.	Fab. Steel
8' 2 x 4's	4	
3/4" sheets AD Plywood	2	
1/8" sheets tempered Masonite	2	
Wood Glue	1	
1 x 4's 10'	4	
1 $\frac{1}{2}$ " x $\frac{1}{4}$ " bolts	12	
3/4" x 1/4" bolts	6	
4" x 3/8" bolts	12	
3/8" nuts	24	
3/8" washers	24	
1/15 6,7 AC/DC Gear Motor	1	2X798 W. W. Grangers
5 Amp. AC/DC Spd. Control	1	4X796 W. W. Grangers
2 1/2" x 1/2" Flex Coup	1	2X497 W. W. Grangers
Pillow Block 1	2	5X699 W. W. Grangers
Fuse Holder	1	McMaster-Carr 70870K140
2 AMP Fuses	1	McMaster-Carr 70850K850
1 AMP Fuses	1	McMaster-Carr 70850K980
Labor		
Tool Room Materials		





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